

**(a) Evidence of Actual Competitive
Deployment of Local Circuit Switches**

508. States should first examine whether competitors are already using their own switches to serve voice customers in the relevant market. We determine that to the extent that there are two wholesale providers or three self-provisioners of switching serving the voice *enterprise* market, and the state commission determines that these providers are operationally and economically capable of serving the *mass* market, this evidence must be given substantial weight by the state commissions in evaluating impairment in the mass market. We find the existence of switching serving customers in the *enterprise* market to be a significant indicator of the possibility of serving the mass market because of the demonstrated scale and scope economies of serving numerous customers in a wire center using a single switch. Although switches serving the enterprise market do not qualify for the triggers described above, we believe that, after implementation of a batch cut process, switches being used to serve the enterprise market are likely to be employed to serve the mass market as well, and that the state commission should investigate the feasibility of this. The evidence in the record shows that the cost of providing mass market service is significantly reduced if the necessary facilities are already in place and used to provide other higher revenue services, and a more efficient cut over process is in place.¹⁵⁶⁸ We choose three self-provisioners and two competitive wholesale providers as the appropriate threshold in order to be assured that the market can support “multiple, competitive” local exchange service providers using their own switch, and for the reasons described in the Trigger section above.¹⁵⁶⁹

509. As with regard to the triggers described above, any competitive switch provider relied upon in the state’s analysis here must be unaffiliated with the incumbent LEC and with any other carrier relied upon, and must be relying on its own switch.¹⁵⁷⁰ This requirement ensures that no provider that uses the switching facilities of the incumbent LEC or another alternative provider to provide service is counted as a separate alternative provider.

510. We also find that to the extent there is a switch in an area serving the local exchange mass market, this fact must be given particularly substantial weight. The existence of a competitor that is serving the local exchange mass market with its own switch provides evidence that the mass market can be served effectively. The state commission should consider whether

¹⁵⁶⁸ For example, a study by WorldCom purports to show that the average cost disadvantage a competitor labors under relative to the incumbent is significantly lower if the competitor already has its own switching, collocation, and transport facilities in place (\$10.03 per customer, assuming the competitor has a 7% market share), than if it must build and install them (\$21.59 per customer). WorldCom Jan. 8, 2003 Switching *Ex Parte* Letter at 3, Attach. A at 2, Appendix: Table 1.

¹⁵⁶⁹ See *supra* paras. 501, 505.

¹⁵⁷⁰ Affiliated companies will be counted together, in order to prevent gaming. As described above, we use the term affiliated and affiliate as the Act defines “affiliate.” See *supra* note 1550.

the entire market could be served by this switch.¹⁵⁷¹ Although a single self-provisioned switch is not sufficient to invoke the mandatory triggers described above, we conclude that the existence of even one such switch might in some cases justify a state finding of no impairment, if it determines that the market can support “multiple, competitive supply.”¹⁵⁷²

(b) Operational Barriers to be Examined

511. As discussed above, state commissions should examine the role of potential operational barriers in determining whether to find “no impairment.” In particular, state commissions should examine whether incumbent LEC performance in provisioning loops, difficulties in obtaining collocation space due to lack of space or delays in provisioning by the incumbent LEC, and difficulties in obtaining cross-connects in an incumbent’s wire center, are making entry uneconomic for competitive LECs. As described above, we find that these factors can raise barriers to entry, but they are not the bases for our national finding of impairment.¹⁵⁷³

512. *Loop Provisioning.* We have found on a national basis that the delays and costs associated with loop provisioning – those specifically arising from the hot cut process – impair a requesting carrier’s entry into the mass market. Above, we have directed the state commissions to implement batch cut processes to reduce the economic and operational barriers posed by the present hot cut process. We recognize, though, that even after such processes are implemented, competitive carriers may face barriers associated with loop provisioning – even problems arising from the newly improved hot cut processes – which may continue to impair a requesting carrier’s entry into the mass market. We therefore ask the state commissions to consider more granular evidence concerning the incumbent LEC’s ability to transfer loops in a timely and reliable manner. Specifically, we ask the states to determine whether incumbent LECs are providing nondiscriminatory access to unbundled loops.¹⁵⁷⁴ Evidence relevant to this inquiry might include,

¹⁵⁷¹ For example, a mass market switch with relatively high variable costs per customer (*i.e.*, in cases where the cost of acquiring and serving each additional customer is high, excluding the fixed costs of entry and collocation) may be able to serve only high revenue customers in the market economically. These variable costs would be determined by hot cut costs, churn, loop costs, and other customer-acquisition outlays.

¹⁵⁷² Whether this competitor is using the incumbent’s loops or its own loops should bear on how much weight to assign this factor, at least until such time as incumbent loops are no longer required to be unbundled.

¹⁵⁷³ As noted above, we lack sufficient specific evidence concerning whether and where these factors will be significant enough to constitute impairment, particularly after a batch cut process has been implemented. Therefore, as part of its analysis, a state must consider evidence of whether operational considerations permit or prevent competitive entry in each market, and, if the latter, whether unbundling would overcome the impairment found. Here, we detail three particular types of operational barriers that may or may not give rise to impairment, even in the presence of a batch cut process.

¹⁵⁷⁴ In determining whether granular evidence contradicts our finding that the hot cut process imposes an operational barrier, the state commission should review evidence of consistently reliable performance in three areas: (1) Timeliness: percentage of missed installation appointments and order completion interval; (2) Quality: outages and percent of provisioning troubles; and (3) Maintenance and Repair: customer trouble report rate, percentage of missed repair appointments, and percentage of repeat troubles. This review is necessary to ensure that customer loops can be transferred from the incumbent LEC main distribution frame to a competitive LEC collocation as promptly and efficiently as incumbent LECs can transfer customers using unbundled local circuit switching. This (continued....)

for example, commercial performance data demonstrating the timeliness and accuracy with which the incumbent LEC performs loop provisioning tasks and the existence of a penalty plan with respect to the applicable metrics. For incumbent LECs that are BOCs subject to the requirements of section 271 of the Act, states may choose to rely on any performance data reports and penalty plans that might have been developed in the context of a past, pending, or planned application for long-distance authority. For other incumbent LECs, the states may choose to minimize the regulatory burden posed by extensive metric reporting and penalty plan requirements by reviewing other forms of evidence. State commissions should also consider whether the incumbent's facilities, human resources, and processes are sufficient to handle adequately the demand for loops, collocation, cross connects, and other services required by competitors for facilities-based entry into the voice market.

513. *Collocation.* As described above, we find that the absence of sufficient collocation space in the incumbent central office or offices might in some markets render competitive entry impossible and thus result in impairment. We therefore direct the state commissions to consider evidence concerning the costs and physical constraints associated with collocation in a particular market. We direct state commissions to consider whether competitive entry is inhibited, or is likely to be inhibited going forward, by the exhaustion of available collocation space in the incumbent LEC's central offices. Evidence relevant to this inquiry would include, for example, the amount of space currently available in those central offices; the expected growth or decline, if any, in the amount of space available; and the expected growth or decline, if any, of requesting carriers' collocation space needs, assuming that access to unbundled switching were curtailed. The state commissions shall consider this factor in determining whether to find that requesting carriers are not impaired without access to unbundled local circuit switching.

514. *Competitive LEC – to – Competitive LEC Cross Connects.* We have also determined that an incumbent LEC's failure to provide cross-connections between the facilities of two competitive LECs on a timely basis can result in impairment. Therefore, a state commission considering whether to find "no impairment" with regard to mass market switching must evaluate whether such delays increase requesting carriers' costs to such a degree that entry into the market is rendered uneconomic in the absence of unbundled switching. Evidence relevant to this inquiry would include, for example, information regarding the incumbent's practices and procedures with regard to provision of cross-connects linking competitive carriers' facilities, competitive LECs' complaints regarding the incumbent's past performance in this area, the incumbent LEC's response to these complaints, the costs incurred in connection with deficient performance in this regard, and the degree to which those costs render entry into a given market uneconomic.

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evidence will permit states to evaluate whether competitive carriers are impaired because the quality of their services is below that offered by the incumbent.

(c) Economic Barriers to be Examined

515. State commissions conducting a review of unbundled switching must next examine whether economic factors associated with the use of competitive switching facilities are preventing competitive entry into the mass market, and, if not, whether it is appropriate to find that requesting carriers are not impaired without access to unbundled circuit switching in any particular market. Competing carriers argue that even using the most efficient network architecture available for entry, the UNE-L strategy, they are at a significant cost disadvantage vis-à-vis the incumbent.¹⁵⁷⁵ As discussed above, these carriers focus on two primary types of costs that only they face: (1) the costs of migrating incumbent LEC loops to their switches; and (2) the costs of backhauling voice circuits to their switches from the end offices serving their customers, which as noted above, include the costs associated with collocation in the incumbent LECs' central offices.¹⁵⁷⁶

516. As discussed above, we find that the record does not contain sufficient detail concerning the scope and scale of the barrier posed by the costs associated with migration and backhaul in particular markets to permit us to determine whether and where there may be exceptions to our national finding that competing carriers cannot economically serve the mass market without access to unbundled local switching.¹⁵⁷⁷ Accordingly, we ask state commissions to examine, on a granular basis, evidence that may demonstrate that requesting carriers are not impaired without access to unbundled local circuit switching.

517. *Evidence of Whether Entry is Economic.* In considering whether a competing carrier could economically serve the market without access to the incumbent's switch, the state commission must also consider the likely revenues and costs associated with local exchange mass market service, as detailed below.¹⁵⁷⁸ Specifically, state commissions must determine whether entry is likely to be economic utilizing the most efficient network architecture available to an entrant.¹⁵⁷⁹ While most comments have focused on the UNE-L strategy,¹⁵⁸⁰ in which a

¹⁵⁷⁵ See UNE-P Coalition Comments at 44-46; WorldCom Jan. 8, 2003 Switching *Ex Parte* Letter at 3 (noting that switching has high fixed costs that must be spread over a large number of customers if a competing carrier is to achieve cost efficiencies similar to those enjoyed by the incumbent LEC).

¹⁵⁷⁶ See *infra* Part VI.D.6.a.(i) (discussing possible economic impairment).

¹⁵⁷⁷ See *id.*

¹⁵⁷⁸ See *infra* para. 519.

¹⁵⁷⁹ Consistent with the impairment standard we adopt today, state commissions must determine whether competitors are unable economically to serve the market. State commissions should not focus on whether competitors operate under a cost disadvantage. State commissions should determine if entry is economic by conducting a business case analysis for an efficient entrant. This involves estimating the likely potential revenues from entry, and subtracting out the likely costs (accounting for scale economies likely to be achieved). We note that for switching, at least, parties have submitted business case analyses to demonstrate the likely profitability of entry. See SBC Jan. 14, 2003 Unbundled Switching *Ex Parte* Letter; BellSouth Jan. 30, 2003 *Ex Parte* Letter; see also AT&T Jan. 17, 2003 *Ex Parte* Letter; WorldCom Jan. 8, 2003 Switching *Ex Parte* Letter.

requesting carrier combines the incumbent's loops and transport with its own switch, collocation and backhaul, state commissions must also consider whether new technologies provide a superior means of serving customers. The analysis must be based on the most efficient business model for entry rather than to any particular carrier's business model. Because this analysis involves comparing the potential revenues to the potential costs of entry, a state will necessarily be weighing advantages and disadvantages an entrant has in attempting to serve mass market customers. In judging whether entry is economic, states must also consider how sunk costs and competitive risks affect the likelihood of entry.¹⁵⁸¹

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¹⁵⁸⁰ SBC Jan. 14, 2003 Unbundled Switching *Ex Parte* Letter; BellSouth Jan. 30, 2003 *Ex Parte* Letter; AT&T Jan. 17, 2003 *Ex Parte* Letter; WorldCom Jan. 8, 2003 Switching *Ex Parte* Letter; AT&T Oct. 4, 2002 *Ex Parte* Letter; BiznessOnline.Com Feb. 14, 2003 *Ex Parte* Letter; PACE Dec. 11, 2002 *Ex Parte* Letter.

¹⁵⁸¹ We reject the dissenters' "bootstrapping" argument that other UNEs should not be considered in our impairment analysis. *Chairman Powell Statement* at 11-12; *Commissioner Abernathy Statement* at 7-8. First, we note that consideration of these factors only arises where the competitive triggers have not been met. Second, we note that even though nondiscrimination and pricing obligations under section 251(c)(3) and 252 for each individual UNE certainly lower the cost of entry, these provisions do not necessarily establish that they will lower costs sufficiently to make entry economic without access to any one particular element. Even if interconnection and unbundling are performed as efficiently as is technically feasible, these costs must still be considered in our business case analysis to determine whether entry is uneconomic without access to a particular network element.

To illustrate, even if the unbundling of transport significantly lowers the cost of entry, the cost of using unbundled transport (priced at TELRIC) is still a cost that competitors will likely have to incur to provide local exchange service, and should be included in a business case analysis for determining whether entry is economic. Furthermore, to the extent that transport is needed to extend the loops from the subscriber's wire center to the competitor's collocation, that is an additional cost that should be included in a business case analysis. And even if a market would otherwise be capable of sustaining switch deployment, if an incumbent lacked sufficient collocation space, then, the additional cost (including securing building, additional space, power, etc.) should be considered in the business case analysis. Similarly, if competing carriers were unable to cross connect their cages, a competitive voice LEC would not be able to engage in line splitting with a competitive data LEC, reducing its potential revenues. The dissent is incorrect to conclude that this analysis equates calculating a cost for purposes of a business case analysis with "a source of competitive disadvantage." *Chairman Powell Statement* at 12; see also *Commissioner Abernathy Statement* at 8.

The dissents mischaracterize our intention. Unlike in the *UNE Remand Order*, we do not intend that the availability of any UNE at state established wholesale (TELRIC) rates could by itself constitute impairment without considering all costs and revenues in a business case analysis. Rather, we are requiring the states to conduct an analysis of whether entry is economic by comparing the potential revenues to the potential costs of providing a particular service. Mass market switching, in isolation, is not a service and thus cannot be easily evaluated. Instead, to evaluate the feasibility of self-deploying a switch, states should perform a business case analysis of providing local exchange service. As described, the potential revenues include basic service, vertical features, access charges, see *infra* para. 519, revenues beyond just "switching" revenues. Likewise, costs include the forward-looking, TELRIC costs of the other elements necessary to provide local service. See *infra* para. 520. The cost factors listed should not be considered in isolation, but only in the context of a broad business case analysis that examines all likely potential costs and revenues.

Contrary to the dissents' assertions, our determination of whether competitors are impaired without unbundled switching does not depend on, and is not directly related to, whether loops or transport are unbundled. Rather than compelling the unbundling of switching, the fact that such complementary inputs may be available on an unbundled (continued....)

518. State commissions should also consider how the existence of universal service payments and implicit support flows will impact competitors' ability to serve the specific market. As discussed in Part V.B.3 above, universal service payments and implicit support flows have been used to ensure the universal availability of local exchange service at affordable rates.¹⁵⁸² These payments and support flows are likely to affect whether entry is economic, and therefore our impairment standard requires that they be taken into consideration. Particularly significant is the fact that implicit support flows have been incorporated into retail rates, such that retail rates for particular services may vary significantly from the cost of providing those services. State commissions should consider how competitors' ability to serve the market is facilitated in those areas where rates are "above cost," and is impeded where rates are "below cost," while recognizing that rates are likely to change over time in response to competition.¹⁵⁸³

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basis serves to lower the cost of providing service and thereby makes facilities-based entry more likely to be economic. Indeed, the alternative to assuming that competitors will use UNEs priced at TELRIC as complementary inputs would be to conduct the business case analysis using the cost of self-provisioning all of the elements necessary to provide local exchange service. Such an analysis, however, would lead to significantly greater unbundling, as the costs of self-providing these elements is likely much higher than obtaining them from the incumbent priced at TELRIC. For example, the cost of self-providing a loop could be extremely high and using that cost in the business case analysis for switching would always lead to a finding of impairment. Thus, we reject such an approach and in our business case analysis consider the minimum cost of entering the market, which includes the wholesale (forward-looking, TELRIC) prices of UNEs purchased from the incumbent LEC that are necessary to provide the relevant service. Moreover, we note that to the extent that incumbent LECs believe that TELRIC prices are too low, as they claim, (see, e.g., BellSouth Comments at 25; Verizon Comments at 32), it should make it easier to satisfy this business case analysis for determining whether switching can be self provisioned in a market.

Chairman Powell also asserts that we improperly considered factors that have "characteristics that are not linked to natural monopoly." *Chairman Powell Statement* at 12. As an initial matter, we note that our switching analysis avoids finding impairment on the basis of "natural monopoly" characteristics associated with elements that are complementary inputs (such as loops), because it assumes competitors will use UNEs purchased at TELRIC rates, where they are available. When we list various cost factors for state commissions to consider in their impairment analysis, we do so only because we determined that they were likely costs of entry, and were therefore relevant to a business case analysis.

¹⁵⁸² See *infra* Part V.B.3. Section 254 of the 1996 Act requires that federal support mechanisms be "explicit and sufficient to achieve the purposes of this section", and should be based on a set of principles enumerated in section 254(b), including the principle that consumers in rural and high-cost areas should have access to telecommunications services at rates that are reasonably comparable to those charged in urban areas. 47 U.S.C. § 254(b). Section 254(f) permits states to adopt regulations "to preserve and advance universal service within that [s]tate," provided that these regulations are "not inconsistent with the Commission's rules to preserve and advance universal service." 47 U.S.C. § 254(f). States may also adopt regulations providing additional definitions and standards to promote universal service, but only to the extent that "such regulations adopt additional specific, predictable, and sufficient mechanisms to support such definitions or standards that do not rely on or burden Federal universal service support mechanisms." *Id.*

¹⁵⁸³ As discussed above in Part V.B.3., to the extent that unbundling tends to create pressures to reduce or eliminate these implicit support flows, we note that the states may choose to rebalance rates, adopt an explicit and portable support mechanism, and/or exempt rural and small incumbent LECs from unbundling obligations as provided in section 251(f)(1) of the Act.

519. *Potential Revenues.* In determining the likely revenues available to a competing carrier in a given market, the state commission must consider *all* revenues that will derive from service to the mass market, based on the most efficient business model for entry. These potential revenues include those associated with providing voice services, including (but not restricted to) the basic retail price charged to the customer, the sale of vertical features, universal service payments, access charges, subscriber line charges, and, if any, toll revenues.¹⁵⁸⁴ The state must also consider the revenues a competitor is likely to obtain from using its facilities for providing data and long distance services and from serving business customers.¹⁵⁸⁵ Moreover, state commissions must consider the impact of implicit support flows and universal service subsidies on the revenue opportunities available to competitors. State commissions must ensure that a facilities-based competitor could economically serve all customers in the market before finding

¹⁵⁸⁴ See, e.g., Letter from Joan Marsh, Director, Federal Government Affairs, AT&T, to Marlene H. Dortch, Secretary, FCC, CC Docket Nos. 01-338, 96-98, 98-147 at 3, 11 (filed Sept. 25, 2002) (AT&T Sept. 25, 2002 *Ex Parte* Letter); SBC Jan. 14, 2003 Unbundled Switching *Ex Parte* Letter. The dissents' claim that considering, in the impairment analysis, retail rates that are low as a result of implicit universal service subsidies will "perpetuate reliance on UNE-P" is wrong. To begin with, our analysis considers such rates only if the triggers are not met. Moreover, the dissents voted to approve an impairment analysis that specifically takes such rates into account. As mentioned, our general impairment standard – which Chairman Powell proposed and the Commission voted unanimously to approve – asks "whether all potential revenues from entering a market exceed the costs of entry, taking into account consideration of any countervailing advantages that a new entrant may have." See *supra* para. 84. This analysis requires examination of "prices," see *supra* para. 85, which, as the Order states in a section proposed by Chairman Powell and approved unanimously by the full Commission, may be low as a result of implicit universal service subsidies. See *supra* para. 164 ("[T]he impairment standard adopted by the Commission and reflected in the more granular state commission proceedings mandated by this Order addresses the existence of implicit support flows in several ways. . . . Our impairment standard . . . provides for consideration of whether entry is economic by taking into account the potential revenue opportunities available."). In the same section, again proposed by Chairman Powell and approved unanimously by the full Commission, we explicitly "recognize that 'below-cost' local exchange rates will tend to discourage competitive facilities-based entry, and the absence of such entry will be considered as evidence of impairment." See *supra* para. 168. As Chairman Powell and Commissioner Abernathy agreed, however, consideration of such evidence will not "perpetuate reliance" on UNEs. Specifically, facilities-based competitive entry may still occur because "new entrants using alternative technologies may have lower costs than the incumbent LEC even when UNE rates are set at reasonable levels" and because "[o]ur impairment standard also provides for consideration of evidence concerning the full range of revenue opportunities available" such as "premium" services "attractive to customers even when priced well above the incumbent LEC's rate for local exchange service." See *supra* para. 168 & n.543. Competing carriers can also gain access to the same universal service subsidies available to incumbent carriers by applying for "eligible telecommunications carrier" status. 47 U.S.C. § 214(e)(6); see also 47 U.S.C. § 254(e). These subsidies should encourage entry and, even where our deployment triggers are not met, the availability of the subsidies must be taken into account in determining whether entry is uneconomic. In addition, "the statute contains an exemption from the unbundling requirements for rural carriers and provides for state modification or suspension of the unbundling requirements for incumbent carriers serving, in the aggregate, less than two percent of the nation's access lines." *Id*

¹⁵⁸⁵ This analysis will therefore take into account the scale and scope economies available to carriers using existing facilities to provide a variety of services to all customers that are likely to be served by an efficient entrant.

no impairment.¹⁵⁸⁶ Consideration of potential revenues is consistent with our standard, as described in Part V above, and with the guidance of the *USTA* decision.¹⁵⁸⁷

520. *Potential Costs.* Similarly, the state must consider all factors affecting the costs faced by a competitor providing local exchange service to the mass market.¹⁵⁸⁸ If the state

¹⁵⁸⁶ Thus, in determining whether impairment exists in a market including a particular group of customers, the typical revenue to be obtained from *all* customers in that group must be considered, to ensure that an entering competitor will be able to serve all customers.

¹⁵⁸⁷ The *USTA* decision expressed concern that in some markets incumbent LECs' prices were above cost, and that the Commission failed to take this gap, and the advantage it conferred on competitors, into consideration in its impairment analysis in the *Local Competition Order*. *USTA*, 290 F.3d at 422-23. As discussed in Part V.B.3. (discussion of implicit support flows) *supra*, our standard, involving a granular analysis examining both the cost and revenues associated with entry, automatically incorporates competitive LECs' advantages such as these, and therefore addresses the *USTA* decision's concern about these situations.

¹⁵⁸⁸ The dissents argue that any consideration of the same factors that were considered in the *UNE Remand Order* is impermissible according to the *USTA* decision. *Chairman Powell Statement* at 11 n.30; *Commissioner Abernathy Statement* at 6 n.16. The use of factors common to the *UNE Remand Order* is beside the point. In this Order, we have fundamentally changed the formula (*i.e.*, the unbundling framework and standard) by which we consider these factors. Thus, as stated above and unlike in the *UNE Remand Order*, they may play a role in our analysis, but are not individually dispositive of an impairment determination. *See supra* para. 106 ("While we no longer rely on, or formally examine, the five *UNE Remand* factors as a basis for our analysis of impairment, these factors still play a role in our analysis as they relate to the barriers to entry we have identified above."). Moreover, the dissents' claims that the factors we require states to examine as part of their granular inquiries are inconsistent with the *USTA* decision are wrong. *Chairman Powell Statement* at 9-11; *Commissioner Abernathy Statement* at 6 n.16. Their arguments are predicated upon a mischaracterization of *USTA* and are inconsistent with the Commission's decision in other sections of this Order that they have affirmatively supported.

For example, the dissents argue that the switching analysis relies on costs that are merely ordinary start-up costs and that these costs may not be taken into account under *USTA*. *Chairman Powell Statement* at 9; *Commissioner Abernathy Statement* at 7-8. As an initial matter, we note that these costs are only considered if the automatic triggers are not met. Moreover, although the Commission's switching analysis requires the states to examine certain factors that may contribute to the start-up costs of a new entrant, this is not the end of the inquiry. Consistent with the unbundling analysis applied in the rest of the Order and the guidance from *USTA*, we have examined these costs to determine whether, as balanced against the potential revenues that may be achieved, they are *sufficiently large* to prevent entry. That is, the inquiry we adopt today considers whether, after weighing all the costs associated with entry against the potential revenues and offsetting advantages, entry into the market is economic. A cost disparity that is typical of, and has not prevented, entry into the industry is insufficient to justify impairment under our standard. With respect to the factors themselves, there is general agreement in the record that the relevant start-up costs associated with entry into the local market include purchasing collocation, transmission equipment, transport, and loops. Indeed, in the cost studies submitted by the BOCs themselves they largely utilize the very same factors that we require the states to consider. *USTA* did not require us to ignore the costs associated with these factors; rather, the court directed us to set a higher threshold for determining when these costs, considered cumulatively, are sufficiently large as to create impairment. While any single cost factor may appear to be a small hindrance, it is only by considering the cumulative effect of all cost factors that the total potential hindrance to entry can be fully evaluated.

Notably, in criticizing our switching analysis, the dissents appear to attack the very impairment standard that they proposed, voted for, and applied to the Commission's analysis of transport and loops – other sections of the Order that they affirmatively supported. For example, Chairman Powell complains that "the Majority's switching (continued....)

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decision conflates an impairment standard that properly asks whether entry is 'uneconomic' with the question of whether entry is profitable." *Chairman Powell Statement* at 14. We are at a loss to understand his complaint. The switching section in no way states a requirement to consider "profitability" – that is discussed in the general impairment section which was proposed by Chairman Powell and adopted unanimously by the Commission. The general impairment standard that Chairman Powell proposed and the Commission adopts unanimously asks "whether all potential revenues from entering a market exceed the costs of entry, taking into account consideration of any countervailing advantages that a new entrant may have." *See supra* para. 84. Furthermore, the general impairment section makes clear, in a passage proposed by Chairman Powell and adopted unanimously, that this analysis "is based on determining whether entry would be *profitable* without the UNE in question." *See supra* para. 85 (emphasis added). We merely ask whether entry is economic, and it is Chairman Powell that engages in bootstrapping, criticizing the very standard that he has proposed we consider.

Similarly, Chairman Powell claims that applying in the switching section the impairment standard he proposed and the Commission unanimously adopted "has converted the impairment standard into a protector of individual business plans." *Chairman Powell Statement* at 11. The Order's general impairment section, which again was proposed by Chairman Powell and adopted unanimously, devotes an entire paragraph to explaining why our impairment analysis does not entail assessing individual business plans. That paragraph – entitled "Impairment of Individual Requesting Carriers or Carriers Pursuing a Particular Business Strategy" states that "[w]e will not, as some commenters urge, evaluate whether individual requesting carriers or carriers that pursue a particular business strategy are impaired without access to UNEs." *See supra* para. 115. Rather, we explain, "an entrant is not impaired if it could serve the market in an economic fashion using its own facilities, concerning the range of customers that could reasonably be served and the services that could reasonably be provided with those facilities." *Id.* This same analysis applies in the switching section no less than it does in the other sections of this Order. *See supra* note 1579 (stating that "[t]he business case analysis pertains to 'an efficient entrant' and an estimation of the 'likely potential revenues' and the 'likely costs'").

Chairman Powell claims that "the Majority directs states to consider whether price and revenue reductions that result from additional competitive entrants can form the basis of impairment." *Chairman Powell Statement* at 13. This is simply false, as we do not direct states to consider any such thing. While we recognize that an academically pure interpretation of the impairment standard proposed by Chairman Powell and adopted unanimously in this item might take such reductions into account, we agree with Chairman Powell that a more administratively practicable approach would be to consider prevailing prices and revenues. Accordingly, we expect states to consider prices and revenues prevailing at the time of their analyses. We believe that these are reasonable proxies for likely prices and revenues after competitive entry and will result in a more administrable standard.

Finally, Chairman Powell maintains that our switching analysis "ignores the fact that the rates for collocation and hot cuts as well as other UNEs, are not within the control of the incumbent LEC and therefore are not cognizable under section 251(d)(2)." *Chairman Powell Statement* at 12. This claim is doubly wrong. First, each of these factors is within the incumbent LEC's control. The statute is clear that incumbent LECs are free to negotiate rates for UNEs, hot cuts, and collocation irrespective of statutory standards. *See* 47 U.S.C. § 252(a) ("[A]n incumbent local exchange carrier may negotiate and enter into a binding agreement with the requesting telecommunications carrier or carriers without regard to the standards set forth in subsections (b) and (c) of section 251."). *Second*, to the extent that these factors are impacted by forces beyond the incumbent LEC's control – for example, to negotiate UNE rates, an incumbent LEC must come to an agreement with a requesting carrier – there is no basis whatsoever for Chairman Powell's claim that they "are not cognizable under section 251(d)(2)." The text of the section 251(d)(2) does not mention or in any way suggest such a limitation. *See* 47 U.S.C. § 251(d)(2) ("In determining what network elements should be made available . . . , the Commission shall consider, at a minimum, whether . . . the failure to provide access to such network element would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer."). And the impairment standard proposed by Chairman Powell and adopted unanimously by the Commission requires consideration of "the costs of entry," which necessarily includes some factors entirely beyond the incumbent LEC's control. *See supra* para. 84. Indeed, with respect to (continued....)

commission determines that a UNE-L strategy is the most efficient means of serving the customer, these costs would likely include (among others):¹⁵⁸⁹ the cost of purchasing and installing a switch;¹⁵⁹⁰ the recurring and non-recurring charges paid to the incumbent LEC for loops, collocations, transport, hot cuts, OSS, signaling, and other services and equipment necessary to access the loop;¹⁵⁹¹ the cost of collocation and equipment necessary to serve local exchange customers in a wire center, taking into consideration an entrant's likely market share, the scale economies inherent to serving a wire center, and the line density of the wire center;¹⁵⁹² the cost of backhauling the local traffic to the competitor's switch;¹⁵⁹³ other costs associated with transferring the customer's service over to the competitor; the impact of churn on the cost of customer acquisitions;¹⁵⁹⁴ the cost of maintenance, operations, and other administrative activities;¹⁵⁹⁵ and the competitors' capital costs.¹⁵⁹⁶ State commissions should pay particular attention to the impact of migration and backhaul costs on competitors' ability to serve the

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high-capacity loop facilities, the Chairman proposed and the Commission unanimously approved consideration of multiple criteria outside the control of incumbent LECs, including, among other things, "local topography such as hills and rivers," "availability of reasonable access to rights-of-way," and "building access restrictions/costs." See *supra* para. 335; see also *id.* at para. 410 (listing similar criteria for transport).

¹⁵⁸⁹ Note that these costs are likely to be affected by whether the entrant is using the same facilities to serve customers in other markets, thus taking advantage of available scale and scope economies. Thus, a portion of the costs may be paid for by revenues generated in other markets, and the full cost should not be attributed to serving just one market. For example, it would be unreasonable to assume that the cost of developing a complete OSS system would have to be recovered within a single granular market. Also, if it is determined that an efficient entrant could efficiently serve both enterprise and mass market customers with the same switch, collocation and transport facilities, then the state's analysis of mass market customers in a particular market should not assume that the entire cost of these facilities is borne by these customers.

¹⁵⁹⁰ Granite Dec. 16, 2002 *Ex Parte* Letter.

¹⁵⁹¹ SBC Jan. 14, 2003 Unbundled Switching *Ex Parte* Letter; BellSouth Jan. 30, 2003 *Ex Parte* Letter; AT&T Jan. 17, 2003 *Ex Parte* Letter; WorldCom Jan. 8, 2003 Switching *Ex Parte* Letter; ASCENT Comments at 36; ASCENT Reply at 7; BiznessOnline.Com Feb. 14, 2003 *Ex Parte* Letter at 4.

¹⁵⁹² New South Reply at 25-26; NewSouth Fury Reply Aff. at para. 4; AT&T Jan. 17, 2003 *Ex Parte* Letter; WorldCom Jan. 8, 2003 Switching *Ex Parte* Letter; BiznessOnline.Com Feb. 14, 2003 *Ex Parte* Letter at 4.

¹⁵⁹³ The state commission should consider whether EELs or digital loop carrier remote terminals are the most effective means for a competitor to backhaul the traffic to its switch.

¹⁵⁹⁴ WorldCom Nov. 15, 2002 Customer Churn *Ex Parte* Letter; BiznessOnline.Com Feb. 14, 2003 *Ex Parte* Letter at 4.

¹⁵⁹⁵ See, e.g., BellSouth Jan. 30, 2003 *Ex Parte* Letter at 7; see also AT&T Feb. 4, 2003 UNE-L Cost Impairment *Ex Parte* Letter at 10.

¹⁵⁹⁶ These include the capital carrying costs for the period it takes a competitor to set up operations and achieve profitability. AT&T Feb. 4, 2003 UNE-L Cost Impairment *Ex Parte* Letter at 2, 10. Some of the costs listed here are unlikely to constitute by themselves a barrier to entry, particularly if the incumbent incurs the same costs for the provisioning of its retail service. A state commission should take them into consideration in performing a business case analysis, which requires consideration of all likely revenues and costs.

market. We also note that parties to this proceeding have placed evidence in the record that economic impairment may be especially likely in wire centers below a specific line density.¹⁵⁹⁷ Before finding “no impairment” in a particular market, therefore, state commissions must consider whether entrants are likely to achieve sufficient volume of sales within each wire center, and in the entire area served by the entrant’s switch, to obtain the scale economies needed to compete with the incumbent.¹⁵⁹⁸

(c) Baseline Rolling Use of Unbundled Switching for Customer Acquisition Purposes

521. If, after applying the triggers and the flexible analysis of potential deployment described above, a state commission concurs that requesting carriers are impaired in the mass market in any particular market, we conclude that it must next consider the use of “rolling access to unbundled local circuit switching” to address impairment in that market. Specifically, we conclude that, in some cases, impairment in a given market could be mitigated by granting requesting carriers access to unbundled local circuit switching for a temporary period, permitting carriers first to acquire customers using unbundled incumbent LEC local circuit switching and later to migrate these customers to the competitive LECs’ own switching facilities.¹⁵⁹⁹ As set forth below, we conclude that where transitional access to unbundled switching would cure any impairment that would otherwise undermine competition if requesting carriers were denied access to unbundled local circuit switching, the state must implement such “rolling” access rather than perpetuating permanent access to the switching element.¹⁶⁰⁰

¹⁵⁹⁷ SBC and BellSouth have presented studies to show that competitors using their own switches should be able to earn a positive profit in wire centers serving at least 5,000 lines. SBC Jan. 14, 2003 Unbundled Switching *Ex Parte* Letter; BellSouth Jan. 30, 2003 *Ex Parte* Letter. WorldCom and AT&T provided studies to show that a competitor would operate under a significant cost disadvantage, and that this disadvantage is larger in small wire centers. AT&T Jan. 17, 2003 *Ex Parte* Letter; WorldCom Jan. 8, 2003 Switching *Ex Parte* Letter. WorldCom claims that its cost study shows that in central offices with fewer than 25,000 residential lines, the cost of UNE-L will constitute an insurmountable barrier to entry and competition, even if there are significant reductions in incumbent LEC charges. In central offices serving 25,000 or more residential lines, competitive LECs that achieve a reasonable market share (e.g., 7%) can profitably migrate customers served by unbundled loops combined with unbundled local circuit switching to their own switches, provided that state commissions ensure that operational and economic barriers are substantially reduced or removed. WorldCom Jan. 8, 2003 Switching *Ex Parte* Letter at 7.

¹⁵⁹⁸ BiznessOnline.Com Feb. 14, 2003 *Ex Parte* Letter; PACE Dec. 11, 2002 *Ex Parte* Letter at 5-10; AT&T Jan. 17, 2003 *Ex Parte* Letter; WorldCom Jan. 8, 2003 Switching *Ex Parte* Letter; AT&T Oct. 4, 2002 Comparing ILEC and CLEC Local Network Architectures *Ex Parte* Letter.

¹⁵⁹⁹ We refer to this as “rolling use” because under such a framework, each competitive LEC would obtain limited access to unbundled local circuit switching on a customer-by-customer basis.

¹⁶⁰⁰ Chairman Powell claims that our impairment test for switching is “unworkable.” *Chairman Powell Statement* at 13. To the extent the impairment test for switching is not simple, however, it is because the facts surrounding impairment are not simple. For example, hot cut processes and the charges for them often vary substantially between states. Revenue potential also varies dramatically, as retail rates can vary between states, by the type of customer, and within the state. In order to conduct a granular analysis of the type called for by the D.C. Circuit, it is necessary to take these variations into account. Indeed, in the past, Chairman Powell has argued that such geographic (continued....)

522. We note at the outset that in at least some cases, “rolling” access to unbundled local circuit switching could adequately address certain barriers to entry associated with the switching element. First, competitive LECs may face difficulties in accumulating enough customers to justify batch line migration processing in both new central offices and existing collocations. Because the evidence in the record demonstrates that the provisioning delays caused by the manual hot cut process may place new entrants at a significant competitive disadvantage relative to the incumbent LECs, which are able to offer service to customers immediately after they receive a customer’s order,¹⁶⁰¹ we find that the availability of unbundled local circuit switching – even on a temporary basis – may enable competitors to acquire customers, aggregate them, and migrate them to the carrier’s own switch in a manner that would not be feasible if the customers each had to be migrated individually upon signing up with the competitive LEC.

523. Second, rolling access to unbundled local circuit switching might satisfactorily address barriers associated with high customer turnover.¹⁶⁰² Competitive LECs contend that high churn rates render them unable fully to recover the high non-recurring costs associated with the provision of UNE-L service to end users, because such costs are generally recovered on an amortized basis.¹⁶⁰³ We find that transitional access to unbundled local circuit switching could mitigate some of the costs related to customer churn. Such rolling access would allow the competitive LEC to incur the non-recurring costs associated with UNE-L service only *after* it had served the end user in question for some time. Given the record evidence that churn is most

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variations and “complicated” factors must be taken into account. *See Commissioner Powell Second NPRM Statement*, 14 FCC Rcd at 8720-21 (“The availability of elements outside the incumbent’s network could potentially turn on many factors, such as the existence of vendors and distribution channels, the presence of competing facilities-based LECs and the price of non-incumbent elements relative to the requesting competitor’s ability to pay. These factors are likely to vary significantly from one market to the next It follows directly, then, that assessments of whether an element is necessary to provide service or whether failing to mandate access to that element would impair a new entrant’s ability to provide service will vary significantly among different markets, states, and regions.”). While a more simple solution would have been to find impairment or – as Chairman Powell would have found – no impairment nationwide, this approach would not have been responsive to the statute, the court, or the record in this case. Moreover, the enterprise loop analysis delegated to the states is arguably even more complicated as it requires the states to conduct a location-specific review on an individual customer-by-customer basis. *See supra* para. 328. Similarly, the transport analysis requires a route-by-route review. Again, both Chairman Powell and Commissioner Abernathy support these more complicated analyses.

¹⁶⁰¹ As discussed above, the manual nature of the hot cut process, which requires coordination between competitive LEC and incumbent LEC technicians in a central office, takes a significant period of time. *See WorldCom Jan. 8, 2003 Switching Ex Parte Letter* at 5. CompTel contends that the provisioning interval for lines served by unbundled loops combined with unbundled local circuit switching is, on average, 1-3 days where the corresponding average interval for an unbundled loop is five to six days. *CompTel/PACE Oct. 31, 2002 Ex Parte Letter* at 3.

¹⁶⁰² *WorldCom Jan. 8, 2003 Switching Ex Parte Letter* at 6.

¹⁶⁰³ *See, e.g., WorldCom Comments* at 34 (“Customers may migrate away from the CLEC before the CLEC recovers installation and non-recurring costs.”); *Z-Tel Reply* at 28-29.

frequent in the first few months after the customer switches to a new carrier,¹⁶⁰⁴ rolling access to unbundled switching could eliminate a substantial portion of the non-recurring costs for which competitive LECs would otherwise have gone uncompensated.

524. In light of the prospect that rolling access to unbundled local circuit switching could permit requesting carriers to compete when they otherwise would have been impaired without access to the switching element, we require states to consider and to mandate such rolling access when appropriate, as described here. When a state commission finds that requesting carriers would be impaired in a particular market without access to unbundled local circuit switching, it must next determine whether granting such carriers rolling access to the switching element for a transitional period of 90 days or more would address the impairment found.¹⁶⁰⁵ We conclude that in such cases, the narrow rolling access approach is more appropriate than an approach requiring continued open-ended unbundled access to the switching element. Thus, where the impairment is due primarily or exclusively to the problems associated with the economies of scale, the churn problem, or other issues that would be addressed by rolling access to unbundled local circuit switching, we ask the state commission to implement such a transitional access period for requesting carriers. That transitional period shall be no shorter than 90 days, though the state commissions may determine that a longer period is appropriate, and permit rolling access to unbundled local circuit switching for a period of more than 90 days.¹⁶⁰⁶

(d) Transition Rules

525. To minimize potential service disruptions that could occur from the changes that we adopt today regarding local circuit switching, we retain the four-line “carve-out” from the

¹⁶⁰⁴ WorldCom Nov. 15, 2002 Customer Churn *Ex Parte* Letter. As noted above, WorldCom estimates that it loses about 50% of all new customers within the first three months of service. For customers that choose its “Neighborhood” bundled local and long distance products, WorldCom loses, on average, 25% of its customers within 3 months. *Id.*

¹⁶⁰⁵ We recognize that the record includes support for a wide range of potential customer acquisition periods. WorldCom argues that, because of the high customer turnover, unbundled local circuit switching must not only be available for acquisition of new customers, but also remain available for each new customer for six months after acquisition. WorldCom Jan. 8, 2003 Switching *Ex Parte* Letter at 6. According to Talk America, competitive LECs must still be able to acquire customers using unbundled local circuit switching for 18 months to achieve sufficient numbers for lines for batch migration; to acquire customers in non-located locations to build toward density triggers; and to acquire and serve customers who have both on-net and off-net locations. Letter from Heather Gold, Counsel for Talk America *et al.*, to Marlene H. Dortch, Secretary, FCC, CC Docket Nos. 01-338, 96-98, 98-147, Attach. at 4 (filed Dec. 17, 2002) (Talk America *et al.* Dec. 17, 2002 *Ex Parte* Letter). We choose a 90-day period here because the evidence in this proceeding suggests that a substantial portion of churn occurs within the first three months of service, and because the 90 day period allows competitive LECs significant opportunities to accumulate enough end users to justify a batch hot cut. *See, e.g.*, WorldCom Nov. 15, 2002 Customer Churn *Ex Parte* Letter.

¹⁶⁰⁶ As described in the following section, a state determination to require rolling access to unbundled switching – like a state determination to require open-ended access to the switching element – is subject to modification during a state commission’s subsequent review.

unbundled local circuit switching obligation on an interim basis,¹⁶⁰⁷ pending state commission determinations pursuant to the framework set forth above. In the *UNE Remand Order*, the Commission determined that incumbent LECs are not obligated to provide unbundled local circuit switching to requesting carriers for serving customers with four or more DS0 loops in density zone one of the top fifty MSAs.¹⁶⁰⁸ If we were not to retain the carve-out, carriers could potentially accumulate more multi-line DS0 customers while states pursued their inquiries, only to risk losing those customers after states make their determinations pursuant to the framework described above. This inquiry will likely limit any multi-line DS0 unbundling obligation – either through the detailed review described in the preceding sections, or through a state determination of the appropriate cut-off for multi-line DS0 customers (*i.e.*, the point at which it makes economic sense for a multi-line customer to be served via a DS1 loop).¹⁶⁰⁹ By extending the four-line carve-out on an interim basis, pending such state commission action, we seek to avoid service disruptions that may result from expanding and then possibly reducing the eligibility for local circuit switching in this manner.¹⁶¹⁰

(e) Continuing Review

526. We emphasize that the framework set forth here contemplates ongoing state review of the status of unbundled switching. The operational and economic factors governing the analysis we have described are unlikely to remain constant as technology advances, customer

¹⁶⁰⁷ We find that we have the authority to retain the four-line carve out, especially in light of case law suggesting that agencies are given additional deference for “interim” or “transitional” mechanisms. *See, e.g., CompTel*, 117 F.3d at 1068 (stating that although temporary agency rules are subject to judicial review notwithstanding their transitory nature, substantial deference by courts is accorded to an agency when the issue concerns interim relief); *CompTel*, 87 F.3d at 531; *MCI*, 750 F.2d at 140.

¹⁶⁰⁸ 47 C.F.R. § 51.319(c)(2); *UNE Remand Order*, 15 FCC Rcd at 3822-31, paras. 276-98. We note that the Commission, in the *UNE Remand Order*, had also required incumbent LECs subject to the switching carve-out rule to provide new EEL combinations. This aspect of the rule has become moot in light of the Supreme Court’s ruling in *Verizon*. *See Verizon*, 535 U.S. at 531-38. Thus, we dismiss as moot Intermedia’s petition for clarification of the carve-out’s EEL requirements. *See Intermedia Communications, Inc. Petition for Reconsideration and Clarification, in Implementation of the Local Competition Provisions of the of the Telecommunications Act of 1996*, CC Docket No. 96-98 at 15-17 (filed Feb. 17, 2000) (Intermedia Feb. 17, 2000 Petition for Reconsideration).

¹⁶⁰⁹ *See supra* para. 497. We expect that in those areas where the switching carve-out was applicable (*i.e.*, density zone 1 of the top 50 MSAs), the appropriate cutoff will be four lines absent significant evidence to the contrary. *See id.*

¹⁶¹⁰ We therefore reject arguments that we establish a national carve-out. *See, e.g., NewSouth Reply* at 30; Z-Tel Comments at 52-54 & n.113; WorldCom Reply at 159-61; BellSouth Reply at 23. Because we retain the carve-out only on a transitional basis, and ask the states to establish an appropriate multiline DS0 cut-off point as part of their more granular review, we dismiss as moot the various requests before the Commission to reconsider and clarify the carve-out’s terms. *See Verizon* Feb. 17, 2000 Petition for Reconsideration at 7-11; *CompTel* Feb. 17, 2000 Petition for Reconsideration at 2-5; *Telecommunications Resellers Association Petition for Reconsideration*, CC Docket No. 96-98 at 1-11 (filed Feb. 17, 2000); *MCI WorldCom* Feb. 17, 2000 Petition for Reconsideration at 20-23; *AT&T* Feb. 17, 2000 Petition for Reconsideration at 12-19; *Birch Petition for Partial Reconsideration*, CC Docket No. 96-98 at 1-9 (filed Feb. 17, 2000); *Sprint Petition for Reconsideration and Clarification*, CC Docket No. 96-98 at 7-9 (filed Feb. 17, 2000).

needs change, and the competitive market for local service continues to mature. Therefore, after completion of the initial review described here, we expect states to conduct further granular reviews, pursuant to the procedures the state adopts, to reevaluate whether competitive LECs are impaired without access to unbundled local circuit switching, and whether such impairment, if found, could be cured by rolling access to such facilities. Like the initial proceeding, these further reviews might result in a state conclusion that requesting carriers are impaired in a particular market without access to unbundled local circuit switching, that carriers are *not* impaired, or that carriers *would be* impaired but for the availability of rolling access to such facilities. Where a state finds, applying the standards set forth above, that requesting carriers are no longer impaired without unbundled access to circuit switching, it shall reverse its previous decision that such access is required under section 251(c)(3). The proceedings described in this paragraph shall be completed within six months of the filing of a petition or other pleading submitted in accordance with the prescribed state procedures.¹⁶¹¹

(f) State Commission Failure to Act

527. For the mass market, state commissions will conduct their initial reviews, applying the triggers and factors discussed above,¹⁶¹² within nine months of the effective date of this Order. The incumbent LEC must continue providing unbundled circuit switching in all locations until a state commission completes its proceedings. To the extent that a state commission fails to complete the granular inquiry,¹⁶¹³ any aggrieved party may file a petition with this Commission demonstrating a state's failure to act pursuant to the procedures we outline today.¹⁶¹⁴ Moreover, should a state commission fail to approve a batch cut migration process or provide a detailed explanation why such a process is not necessary within nine months of this Order's effective date, any aggrieved party will be permitted to initiate a proceeding with this Commission.¹⁶¹⁵ The incumbent LEC must continue providing unbundled local circuit switching, subject to the four-line carve-out described above,¹⁶¹⁶ while such a petition is pending with this Commission.

¹⁶¹¹ See *supra* note 1291.

¹⁶¹² This includes the state commissions' approval of a batch cut migration process or, in the alternative, the provision of a detailed explanation why such a process is not necessary within nine months of this Order's effective date.

¹⁶¹³ By "complete," we mean that a state commission, upon receiving sufficient evidence, has an affirmative obligation to review the relevant evidence associated with any market submitted by an interested party, and to apply the trigger and any other analysis specified in this Part to such evidence.

¹⁶¹⁴ As discussed above, if a state fails to act, we set forth procedures for the Commission to step into the role of the state. See *supra* Part V.E.2. (discussing the role of the states).

¹⁶¹⁵ See *id.*

¹⁶¹⁶ See *supra* para. 525.

7. Transition of the Embedded Customer Base

528. We recognize the need to establish a transition plan to migrate the embedded unbundled local circuit switching customer base to an alternative service arrangement when unbundled local circuit switching is no longer made available. We find that we have the authority to establish such a plan because whether competing carriers can deploy facilities in a timely fashion is a key consideration in determining whether there is impairment. In instances when existing network elements may potentially be eliminated pending a fact-intensive investigation, we find that section 251(d)(2) gives us authority to promulgate reasonable transition rules to protect the public interest by preserving the status quo pending the outcome of the investigation and by giving competitive carriers a realistic opportunity to deploy their own facilities.¹⁶¹⁷ Because the record contains a wide range of proposals that, in many respects, do not on their own account fully for the interests of all stakeholders involved, we further recognize a need to exercise discretion in establishing the specific parameters for the transition plan. Our exercise of discretion is one that inherently resists mathematical precision, calling on us instead to make reasonable judgments based on a totality of competing factors.

529. The most critical aspect of any industry-wide transition plan is to avoid significant disruption to the existing customer base served via unbundled local circuit switching so that consumers will continue to have access to their telecommunications service. The record reflects that, by the end of 2002, more than ten million residential and small business lines were being served by competitive LECs via unbundled local circuit switching arrangements.¹⁶¹⁸ We agree with carriers on the need to establish quantifiable milestones to ensure the transition takes place in an orderly manner.¹⁶¹⁹ We recognize that eliminating unbundled access to incumbent LEC switching on a flash cut basis could substantially disrupt the business plans of some competitors. This is especially unacceptable, given that the record contains substantial evidence – including cost studies submitted by the incumbent LECs themselves – that competitive carriers suffer cost disadvantages and other barriers when they self-deploy switching in some locations.¹⁶²⁰ There is also a need for an orderly transition to afford sufficient time for carriers to implement any necessary business and operational plans and practices to account for the changed regulatory environment, including the need to modify or revise their interconnection agreements. For example, competitive LECs may need to develop new UNE-L provisioning systems, including hiring, training, and equipping loop provisioning and switch technicians; purchase and collocate new equipment; create additional customer service and trouble maintenance groups; revise

¹⁶¹⁷ See Letter from Jay Bennett, Executive Director – Federal Regulatory, SBC, to Marlene H. Dortch, Secretary, FCC, CC Docket Nos. 01-338, 96-98, 98-147 at 5-7 (filed Nov. 19, 2002) (SBC Nov. 19, 2002 *Ex Parte* Letter).

¹⁶¹⁸ PACE Jan. 14, 2002 *Ex Parte* Letter at 2.

¹⁶¹⁹ SBC Reply at 112.

¹⁶²⁰ Letter from Jay Bennett, Executive Director – Federal Regulatory, SBC, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338, Attach. *Residential Customers Can Be Profitably Served Using UNE-L* at 2 (filed Jan. 24, 2003) (SBC Jan. 24, 2003 *Ex Parte* Letter); see also BellSouth Jan. 24, 2003 *Ex Parte* Letter at 12.

wholesale billing systems; and develop capabilities for E911 and local number portability.¹⁶²¹ Moreover, our transition plan must require the incumbent LEC to unbundle its local circuit switching facilities for some limited period *after* a state commission has found “no impairment,” because otherwise a competitive LEC would be forced to halt its advertising and customer acquisition activities between the time the state commission issued its findings and the time the competitive LEC was able to serve its customers using alternative facilities. Finally, our plan must ensure that, as a practical matter, the transition occurs in a timely manner. We balance these important considerations against the reality that it would frustrate the statutory scheme and the court’s conclusion that impairment is the “touchstone” of our unbundling decision if customers are not transitioned from required unbundled switching as expeditiously as possible.

530. The parties take diverging positions regarding a transition from unbundled switching to facilities-based service (*i.e.*, UNE-L or resale).¹⁶²² Incumbent LECs generally support elimination of their obligation to unbundle local circuit switching and propose transition plans away from unbundled incumbent LEC local circuit switching.¹⁶²³ Competitive LECs generally oppose the incumbent LEC transition proposals and argue that the Commission should

¹⁶²¹ See, *e.g.*, WorldCom Nov. 18, 2002 Transition to UNE-L *Ex Parte* Letter at 4.

¹⁶²² SBC, for example, offers a proposal with respect to customers served by unbundled loops combined with unbundled local circuit switching, which relies on the establishment of a national two-year transitional wholesale offering for serving residential customers that is functionally equivalent to such an arrangement at a rate of \$26 per month. See SBC Nov. 19, 2002 *Ex Parte* Letter at 5. Under SBC’s proposal, resale and UNE-L options would remain available for competitive LECs to serve the mass market. Several competitive LECs propose migration from unbundled switching to competitive LEC-owned switching over time based on ensuring that competitive LECs migrate to their own switching platform as self-provisioned switching becomes technically and economically feasible. See Letter from Heather B. Gold, Representative for Broadview, Talk America, and Eschelon, to Marlene H. Dortch, Secretary, FCC, CC Docket Nos. 01-338, 96-98, 98-147 (filed Jan. 2, 2003) (Broadview *et al.* Jan. 2, 2003 Unbundled Switching to Unbundled Loop Proposed Migration *Ex Parte* Letter).

¹⁶²³ See Verizon Oct. 16, 2002 *Ex Parte* Letter at 18; Verizon Jan. 10, 2003 *Ex Parte* Letter at 2 (stating that if the Commission chooses to adopt a transition plan for residential customers, an appropriate transition would be one that moves quickly to the resale price prescribed by Congress). According to Verizon, the Commission should transition the residential rates for access to unbundled loops combined with unbundled local circuit switching to the state-established resale rate over a 12-month period. See Verizon Jan. 10, 2003 *Ex Parte* Letter at 2. One third of the differential would be eliminated immediately, as of the date of the Commission’s order. *Id.* Another third would be eliminated after six months. *Id.* At the end of the 12-month period, the residential rates for access to unbundled loops combined with unbundled local circuit switching would be the resale rate. *Id.* at 2-3. Verizon further recommends that these transitional rates apply to the embedded base of residential customers served by unbundled loops combined with unbundled local circuit switching as well as any new customers added for the first six months after the Commission’s order. *Id.* Qwest’s plan, for example, would require the following: (1) Day 60 – Competitive LECs would declare its preferred transition option; (2) As soon as possible – Transition existing customers served by unbundled loops combined with unbundled local circuit switching to Resale or Unbundled Switching; (3) August 2003 – Transition existing customers served by unbundled loops combined with unbundled local circuit switching to new market-based product offering from Qwest; and (4) December 2003 – Transition existing customers served by unbundled loops combined with unbundled local circuit switching to stand-alone loops on a negotiated project basis. See Letter from Cronan O’Connell, Vice President – Federal Regulatory, Qwest, to Marlene H. Dortch, Secretary, FCC, CC Docket Nos. 01-338, 96-98, Attach. at 2 (filed Oct. 30, 2002) (Qwest Oct. 30, 2002 Switching *Ex Parte* Letter).

not establish triggers to transition away from incumbent LEC unbundled local circuit switching. In several *ex parte* presentations, a number of parties softened their initial positions and proposed narrowly tailored transition proposals towards promoting facilities-based competition. For example, incumbent LECs propose transition plans based on a finding of no impairment for all customer classes. Several competitive LECs propose migration from unbundled switching to competitive LEC-owned switching over time based on ensuring that competitive LECs migrate to their own switching platform as self-provisioned switching becomes technically and economically feasible, with all proposals envisioning substantial state involvement to administer the phase-out.¹⁶²⁴ For example, Broadview, Eschelon, and Talk America propose a four-step migration plan, which requires incumbent LECs to create efficient loop provisioning processes for hot cutting unbundled loops combined with unbundled local circuit switching to unbundled stand-alone loops migration once competitive LECs exceed prescribed line densities.¹⁶²⁵ Z-Tel details a five-step plan for building wholesale switching and transport alternatives, which, it contends, will support the entry of several telecommunications firms.¹⁶²⁶ While we decline to adopt these proposed transition plans,¹⁶²⁷ and any other transition proposal in full, we base our decision on evaluation of those proposals in the record and our transition plan goals noted above.

531. We find that state commissions are well suited to monitoring the operational aspects of this migration, and we therefore incorporate a state role into our transition plan. State

¹⁶²⁴ Broadview *et al.* Jan. 2, 2003 Unbundled Switching to Unbundled Loop Proposed Migration *Ex Parte* Letter; Letter from Heather B. Gold, Counsel for Broadview, Talk America, and Eschelon, to Marlene H. Dortch, Secretary, FCC, CC Docket Nos. 01-338, 96-98, 98-147, Attach. at 2 (filed Dec. 31, 2002) (Broadview *et al.* Dec. 31, 2002 *Ex Parte* Letter).

¹⁶²⁵ Broadview *et al.* Jan. 2, 2003 Unbundled Switching to Unbundled Loop Proposed Migration *Ex Parte* Letter at 2. According to the plan, step 1 requires incumbent LECs to develop, implement, and then have certified a loop migration process in each state. *Id.* Then, according to step 2, once an incumbent LEC has implemented a *satisfactory migration process*, it can petition the state to determine sufficient customer density to justify facilities investment. *Id.* at 4. Step 3 provides competitive LECs with at least 18 months to migrate lines above the requisite numbers to their own facilities; for subsequent migrations, competitive LECs will have six months to establish collocation and migrate lines above the requisite number to their own facilities. Lastly, step 4 of their proposal requires that competitive LECs be able to acquire customers using unbundled local circuit switching, pending implementation of an incumbent LEC efficient loop migration process.

¹⁶²⁶ See Letter from Christopher J. Wright, Counsel for Z-Tel, to Marlene H. Dortch, Secretary, FCC, CC Docket Nos. 01-338, 96-98, 98-147 (filed Nov. 22, 2002) (Z-Tel Nov. 22, 2002 *Ex Parte* Letter). Z-Tel's plan envisions the availability of unbundled access to switching until vibrant, effective, and efficient wholesale alternative providers of mass market switching and transport services are in place. *Id.* at 1. The five-step plan consists of equal access requirements for loop provisioning; competitive wholesale interoffice transport; switch-based competitive LEC transfer from unbundled local circuit switching; competitive analysis of wholesale providers by state commissions; and a transition to wholesale providers. *Id.* at 2. A key aspect of the plan is to make sure the steps are completed in sequence before proceeding to the next step. *Id.* According to Z-Tel, the principal adjudicator as to whether a step has been completed is the state commission. *Id.* at 6.

¹⁶²⁷ While the Supreme Court has advised that "[t]he Commission cannot, consistent with the statute, blind itself to the availability of elements outside the incumbent's network," including review of requesting carriers ability to "self-provision, or purchas[e] from another provider," the Commission is not obligated to establish a wholesale market for switching and transport. See *Iowa Utils. Bd.*, 525 U.S. at 389.

commissions have strong incentives both to encourage competition (as a means of providing citizens of their states with a choice of service providers) as well as to foster new investment (as a means of promoting economic growth in their states). The evidence in the record demonstrates that state commissions have a strong interest in creating the conditions for transition from service using unbundled local circuit switching to unbundled stand-alone loops wherever possible, and managing the transition in a way that promotes investment as well as continued choice for consumers. We therefore require competitive and incumbent LECs to jointly submit the details of their implementation plan to the appropriate state commission. In addition, we require competitive LECs to notify the relevant state commissions when they have submitted their orders for migration. Finally, we require incumbent LECs to notify the relevant state commission when they have completed the migrations.

532. Competing carriers must transfer their embedded base of DS1 enterprise customers to an alternative service arrangement within 90 days from the end of the 90-day state commission consideration period, unless a longer period is necessary to comply with a “change of law” provision in an applicable interconnection agreement.¹⁶²⁸ To the extent a state commission finds “no impairment” for mass market customers in a particular market, we require mass market carriers to commit to an implementation plan with the appropriate incumbent LEC within two months from the finding of no impairment. Thus, if a state commission determines that there is no impairment for a particular market in its initial 9 month review, the carriers must have a plan in place within 11 months of the effective date of this Order. By five months after a finding of no impairment, competitive LECs may no longer request access to unbundled local circuit switching. Moreover, we require competitive LECs to submit the necessary orders¹⁶²⁹ for one-third of their customers in accordance with the following schedule: (1) 13 months after a finding of no impairment: Each competitive LEC must submit orders for one-third of all its unbundled local circuit switching end users; (2) 20 months after a finding of no impairment: Each competitive LEC must submit orders for half of its remaining unbundled local circuit switching end users; and (3) 27 months after a finding of no impairment: Each competitive LEC must submit orders for its remaining unbundled local circuit switching end users.¹⁶³⁰

¹⁶²⁸ See *infra* Part VIII.D (transition period).

¹⁶²⁹ For purposes of calculating the number of customers who must be migrated, the embedded base of customers shall include all customers served using unbundled switching that are not being served with transitional unbundled switching.

¹⁶³⁰ We disagree with Chairman Powell’s claim that permitting competitive LECs to transition their mass market customers off of unbundled switching over the course of a three-year period is either unreasonable or unlawful. *Chairman Powell Statement* at 13. As an initial matter, we note that, at the time of this Order’s adoption, there were over ten million customers receiving local service over unbundled local switches. Chairman Powell concedes that the Commission has the discretion to set forth reasonable transition periods and, given the enormous number of customers that may potentially be affected, we believe that three years is a reasonable amount of time. *Chairman Powell Statement* at 13. Further, we note that this Commission voted unanimously to give the states unlimited discretion to determine the appropriate transition period for migrating customers off of enterprise loops and transport UNEs where they find no impairment for these facilities. See, e.g., *supra* para. 338 (stating expectation that states will give competitors an “appropriate period” to transition from unbundled loops). Significantly, Chairman Powell does not appear to be concerned about legality of continued access to these facilities after an “*express finding* of no (continued....)

E. Shared Transport

1. Background

533. In the *Triennial Review NPRM*, the Commission sought comment on whether it should retain or modify the existing unbundling obligations for shared transport.¹⁶³¹ The Commission previously has defined shared transport as “transmission facilities shared by more than one carrier, including the incumbent LEC, between end office switches, between end office switches and tandem switches, and between tandem switches in the incumbent LEC’s network.”¹⁶³² In the *Shared Transport Order*, the Commission clarified the extent to which incumbent LECs are obligated to provide requesting carriers with access to shared transport.¹⁶³³ The Commission later found in the *UNE Remand Order* that, without access to shared transport, requesting carriers are impaired in their ability to use unbundled local circuit switching.¹⁶³⁴

2. Discussion

534. Incumbent LECs and competitive LECs demonstrate that the use of unbundled shared transport is tied exclusively to unbundled local switching.¹⁶³⁵ Verizon and SBC assert that because switching and shared transport are inextricably linked, if incumbent LECs are no longer obligated to unbundle switching, they should no longer be obligated to unbundle shared transport.¹⁶³⁶ We agree. Therefore, we find that requesting carriers are impaired without access (Continued from previous page) _____

impairment.” *Chairman Powell Statement* at 13. Moreover, under our switching transition period, competitive LECs must begin transitioning one-third of their customers to their own facilities 13 months after a finding of no impairment. Once competitive carriers have incurred the fixed costs associated with deploying their own switching facilities to support one-third of their customers, we find it likely that such carriers will have an incentive to fill the capacity of their switch such that they will not necessarily need the full three years to complete the migration – assuming, of course, that the incumbents can successfully manage the cutover process. Finally, providing a sufficiently long transition for the embedded base of customers should have the effect of encouraging competitive entry and investment in the future. Without such a transition, potential entrants might fear that investments they make in facilities, office systems, and marketing would be stranded if future unbundling decisions suddenly made their business plans no longer viable.

¹⁶³¹ *Triennial Review NPRM*, 16 FCC Rcd at 22809-10, para. 63.

¹⁶³² *UNE Remand Order*, 15 FCC Rcd at 3862, para. 370; 47 C.F.R. § 51.319(d)(1)(iii); see generally *Shared Transport Order*, 12 FCC Rcd 12460.

¹⁶³³ *Shared Transport Order*, 12 FCC Rcd at 12462, para. 2.

¹⁶³⁴ *UNE Remand Order*, 15 FCC Rcd at 3862-66, paras. 369-79.

¹⁶³⁵ See, e.g., SBC Comments at 81; Verizon Comments at 95 n.319; SBC Reply at 141; Letter from Peter Karoczka, InfoHighway Communications Corp., to Marlene H. Dortch, Secretary, FCC, CC Docket Nos. 01-338, 96-98, 98-147, Attach. at 1 (filed Feb. 14, 2003) (InfoHighway Feb. 14, 2003 *Ex Parte* Letter); Z-Tel Reply at 68-69; *UNE Remand Order*, 15 FCC Rcd at 3862, para. 369 n.731 (stating, “the only carrier that would need shared transport facilities would be one that was using an unbundled local switch”); *Id.* at 3863, para. 371 (stating, “shared transport is technically inseparable from unbundled switching.”).

¹⁶³⁶ See SBC Comments at 81; Verizon Comments at 95 n.319; SBC Reply at 141.

to unbundled shared transport only to the extent that we find they are impaired without access to unbundled switching.¹⁶³⁷ Because unbundled shared transport is linked to the use of unbundled switching, and because the Commission delegates a role to state commissions in identifying impairment for unbundled circuit switching,¹⁶³⁸ states should incorporate into their analyses of switching the economic characteristics of shared transport and other backhaul.¹⁶³⁹ Thus, we find that requesting carriers are impaired without access to unbundled shared transport – transmission facilities shared by more than one carrier between end office switches, between end office switches and tandem switches, and between tandem switches¹⁶⁴⁰ in the incumbent LEC's network – to the extent that local circuit switching is unbundled.

F. Packet Switching

1. Background

535. In the *UNE Remand Order*, the Commission defined “packet switching capability” as “routing or forwarding packets, frames, cells or other data units based on address or other routing information contained in the packets, frames, cells or other data units” as well as the functions performed by DSLAMs.¹⁶⁴¹ The Commission also excluded packet switching

¹⁶³⁷ This conclusion is similar to the Commission's conclusion in the *UNE Remand Order*. See 15 FCC Rcd at 3862, para. 369 (“where an incumbent LEC provides requesting carriers with access to unbundled switching, we require incumbent LECs also to provide access to unbundled shared transport services”).

¹⁶³⁸ See *supra* Part VI.D (describing the role states may take in identifying impairment for unbundled local circuit switching).

¹⁶³⁹ The record indicates that without access to unbundled shared transport, a requesting carrier with access to unbundled switching would have to obtain dedicated transport from the incumbent LEC, from a third party, or by self-provisioning. See, e.g., AT&T Comments at 159, 161; see also *UNE Remand Order*, 15 FCC Rcd at 3864, para. 374. Our discussion of dedicated transport, above, analyzes the barriers to entry related to self-deploying or otherwise obtaining dedicated transport facilities. See Part VI.B.3.d, *supra*. The record also indicates that shared transport is rarely available from third party sources and no incumbent LEC presents evidence of third-party alternatives to unbundled shared transport. See UNE-P Coalition Comments at 54; CTC Reply at 18.

¹⁶⁴⁰ Shared transport between local tandem switches sometimes is used by competing carriers for “transiting” – a means of indirectly interconnecting with other competing carriers for the purpose of terminating local and intraLATA traffic. See, e.g., InfoHighway Feb. 14, 2003 *Ex Parte* Letter at 2. To date, the Commission's rules have not required incumbent LECs to provide transiting. See *Application by Verizon Maryland Inc., Verizon Washington, D.C. Inc., Verizon West Virginia Inc., Bell Atlantic Communications Inc., (d/b/a Verizon Long Distance), NYNEX Long Distance Company (d/b/a Verizon Enterprise Solutions), Verizon Global Networks Inc., and Verizon Select Services Inc., for Authorization to Provide In-Region, InterLATA Services in Maryland, Washington, D.C., and West Virginia*, WC Docket No. 02-384, Memorandum Opinion and Order, 18 FCC Rcd 5212, 5271, para. 101 (2003) (*Verizon Maryland/DC/West Virginia 271 Order*). The Commission plans to address transiting in its pending *Intercarrier Compensation* rulemaking proceeding. See *Developing a Unified Intercarrier Compensation Regime*, CC Docket No. 01-92, Notice of Proposed Rulemaking, 16 FCC Rcd 9610 (2001) (*Intercarrier Compensation NPRM*).

¹⁶⁴¹ *UNE Remand Order*, 15 FCC Rcd at 3833-34, paras. 302-04; see 47 C.F.R. § 51.319(c)(4).

functionalities from the section 251(c)(3) unbundling obligations, except in limited circumstances.¹⁶⁴²

536. In the *Triennial Review NPRM*, the Commission sought comment on whether, in light of changed circumstances, it should retain this limited unbundling requirement and if so, whether it should modify this requirement or the existing definition of packet switching, including the DSLAM functionality.¹⁶⁴³ The Commission also sought comment on the benefits and burdens resulting from the packet switching unbundling requirement and whether there are any alternative, less burdensome options available to achieve the goals of the Act.¹⁶⁴⁴

2. Discussion

537. We find, on a national basis, that competitors are not impaired without access to packet switching, including routers and DSLAMs.¹⁶⁴⁵ Accordingly, we decline to unbundle packet switching as a stand-alone network element.¹⁶⁴⁶ We further find that the Commission's limited exception to its packet-switching unbundling exemption is no longer necessary.¹⁶⁴⁷ Lastly, our decision not to unbundle stand-alone packet switching is consistent with the goals of section 706 of the 1996 Act.¹⁶⁴⁸

538. Evidence in our record demonstrates that the considerations applied in the *UNE Remand Order* apply with equal force at this time to support our earlier decision not to unbundle packet switching as a stand-alone network element.¹⁶⁴⁹ Specifically, the record shows that a wide

¹⁶⁴² *UNE Remand Order*, 15 FCC Rcd at 3838-39, para. 313; see 47 C.F.R. § 51.319(c)(5). An incumbent LEC must provide access to unbundled packet switching only where the incumbent LEC has deployed digital loop carrier systems or otherwise deployed fiber optic facilities in the distribution part of the loop; has no spare copper loops capable of providing the xDSL service the requesting carrier seeks to offer; has not permitted the requesting carrier to collocate its own DSLAM at an appropriate subloop point; and has deployed packet switching for its own use.

¹⁶⁴³ *Triennial Review NPRM*, 16 FCC Rcd at 22809, paras. 61-62.

¹⁶⁴⁴ *Id.* at 22809, para. 62.

¹⁶⁴⁵ As discussed below, this conclusion applies to both the mass market and the enterprise market.

¹⁶⁴⁶ See *UNE Remand Order*, 15 FCC Rcd at 3835, para. 306. The incumbent LECs contend that packet switching should not be required as a UNE. See, e.g., SBC Comments at 52; Qwest Comments at 41. Sprint also states that it "does not quarrel with this position, at least in the central office environment." See Sprint Reply at 32.

¹⁶⁴⁷ See *UNE Remand Order*, 15 FCC Rcd at 3838-39, para. 313. Access to packet switching functionalities as used in DLC loop architecture is discussed in Part VI.A.4., *infra*, which addresses unbundled loops.

¹⁶⁴⁸ 47 U.S.C. § 157 nt.

¹⁶⁴⁹ Based on the record in this proceeding, we deny the portion of WorldCom's Petition for Reconsideration arguing that the Commission should reconsider its prior decision to not unbundle packet switching beyond the limited exception provided for in our vacated rules. See MCI WorldCom Feb. 17, 2000 Petition for Reconsideration at 2-15. For the same reasons, we deny the portion of the Petition for Reconsideration and Clarification of Intermedia Communications, Inc. arguing that the Commission should reconsider its prior decision to not unbundle packet switching. See Intermedia Feb. 17, 2000 Petition for Reconsideration at 3-13. Because we decline to (continued....)

range of competitors are actively deploying their own packet switches, including routers and DSLAMs to serve both the enterprise and mass markets,¹⁶⁵⁰ and that these facilities are much cheaper to deploy than circuit switches.¹⁶⁵¹ In fact, according to the BOC UNE Fact Report 2002, un rebutted in the record, competitive LEC deployment of packet switching has doubled since the *UNE Remand Order*, from 860 in 1998 to at least 1,700 in 2001.¹⁶⁵² In addition, more than 55 competitive LECs have deployed packet switches in more than 200 different cities.¹⁶⁵³ In the top 100 MSAs, the average number of packet switches per MSA has grown by an average of nearly 150 percent since our last UNE review.¹⁶⁵⁴ The record also shows that several carriers maintain their own frame relay and ATM networks with AT&T, WorldCom, and Sprint each operating extensive, nationwide networks.¹⁶⁵⁵ In addition, competitive carriers lead incumbent LECs in the deployment of Gigabit Ethernet switches.¹⁶⁵⁶

539. Consistent with the *UNE Remand Order*, we conclude that any collocation costs and delays incurred by requesting carriers to provide packet switched services do not rise to a level so as to require us to modify the Commission's previous finding not to unbundle packet switching.¹⁶⁵⁷ In fact, the record shows that any advantages that competitive LECs may have in obtaining collocation space are likely outweighed by their advantage in relying solely on newer,

(Continued from previous page) —————

unbundle packet switching as a stand-alone UNE under our new unbundling framework, we dismiss as moot the arguments raised in the *Intermedia Petition for Reconsideration* and the *Petition for Reconsideration* filed by CompTel dealing with forms of packet switching and combinations that include packet switching. See *Intermedia* Feb. 17, 2000 Petition for Reconsideration at 3-13; *CompTel* Feb. 17, 2000 Petition for Reconsideration.

¹⁶⁵⁰ According to the BOC UNE Fact Report 2002, the largest providers of both Frame Relay and ATM services are AT&T, WorldCom, and Sprint. See BOC UNE Fact Report 2002 at II-24. In addition, Covad has deployed DSLAMs, routers, ATM equipment in nearly 2000 central offices – reaching 45% of the country in 35 states. See Letter from Florence Grasso, Covad, to Marlene H. Dortch, Secretary, FCC, CC Docket 01-338, Attach. at 2 (filed Nov. 7, 2002) (Covad Nov. 7, 2002 *Ex Parte* Letter); Covad Comments at 5; see also *Third Section 706 Report 2002*, 17 FCC Rcd at 2873-74, para. 70.

¹⁶⁵¹ According to the BOC UNE Fact Report 2002, packet switches are much cheaper to deploy than circuit switches. See BOC UNE Fact Report 2002 at II-33. Because of extensive self-deployment by competitive LECs, we need not rely on the existence of a wholesale market for packet switching.

¹⁶⁵² *Id.* at II-23.

¹⁶⁵³ *Id.*

¹⁶⁵⁴ *Id.* at II-23 and Table 11.

¹⁶⁵⁵ *Id.* at II-24 and Figure 5.

¹⁶⁵⁶ *Id.* at II-25.

¹⁶⁵⁷ See *UNE Remand Order*, 15 FCC Rcd at 3835-40, paras. 306-17; see also Covad Comments at 56 (discussing the costs associated with remote terminal collocation); see also ASCENT Comments at 40; but see Verizon Comments at n.289 (stating that “subsequent developments – principally, the nearly pervasive collocation of companies such as Covad, the availability of cageless and shared collocation, and the adoption of strict intervals for establishing collocation arrangements – demonstrate that any impairment no longer exists.”).

more efficient technology.¹⁶⁵⁸ In addition, most of the arguments regarding the difficulties associated with collocation for packet switches deal with collocation at the remote terminal, rather than the central office. We discuss this particular issue in our discussion of unbundled loops.¹⁶⁵⁹ Accordingly, there do not appear to be any barriers to deployment of packet switches that would cause us to conclude that requesting carriers are impaired with respect to packet switching. We therefore find that the evidence in the record confirms the Commission's findings in the *UNE Remand Order* that competitors continue to actively deploy their own packet switches, including routers and DSLAMs, and are not impaired without unbundled access to these facilities from incumbents.

540. Most parties that favor the unbundling of packet switching focus their arguments on unbundling the packet switching functionality as it exists in DLC systems that are deployed in the loop plant to provide multiplexing, switching, and routing functionalities between the customer premises and the central office.¹⁶⁶⁰ Our rules covering these situations are discussed in Part VI.A.4.a.(v), which addresses unbundled loops. In view of our analysis in that section, we decline to permit any limited exceptions to our decision not to unbundle packet switching.¹⁶⁶¹

541. Finally, because packet switching is used in the provision of broadband services, our decision not to unbundle stand-alone packet switching is also guided by the goals of, and our obligations under, section 706 of the 1996 Act.¹⁶⁶² In order to ensure that both incumbent LECs and competitive LECs retain sufficient incentives to invest in and deploy broadband infrastructure, such as packet switches, we find that requiring no unbundling best serves our statutorily-required goal. Thus, we decline to require unbundling on a national basis for stand-alone packet switching because it is the type of equipment used in the delivery of broadband.

G. Signaling Networks

1. Background

542. In the *Triennial Review NPRM*, the Commission sought comment on whether it should modify its requirement that signaling be unbundled for competitive LECs.¹⁶⁶³ Signaling systems facilitate the routing of telephone calls between switches and are necessary components

¹⁶⁵⁸ See BOC UNE Fact Report 2002 at II-33 & n.127.

¹⁶⁵⁹ See *infra* Part VI.A.4. (addressing unbundled loops).

¹⁶⁶⁰ See, e.g., Sprint Comments at 40-45; WorldCom Comments at 113-19; Covad Comments at 54-65.

¹⁶⁶¹ In addition, the rules we adopt for unbundled loops do not require incumbent LECs to provide unbundled access to any electronics or other equipment used to transmit packetized information over hybrid loops, such as xDSL-capable line cards installed in DLC systems or equipment used to provide passive optical networking capabilities to the mass market. See *infra* Part VI.A.4.a.(v).

¹⁶⁶² 47 U.S.C. § 157 nt.

¹⁶⁶³ *Triennial Review NPRM*, 16 FCC Rcd at 22811, para. 65.

of providing circuit-based telecommunications services.¹⁶⁶⁴ The telecommunications network in the United States employs out-of-band signaling, meaning that the signaling network is physically separate from the carrier's voice network.¹⁶⁶⁵ Out-of-band signaling is performed using the SS7 protocol and requires access to an SS7 network.¹⁶⁶⁶

543. In the *Local Competition Order*, the Commission determined that competitive LECs would be impaired without access to the incumbent LECs' unbundled signaling links and STPs.¹⁶⁶⁷ The Commission concluded that the alternative signaling methods available would provide a lower quality of service to the competitive carriers.¹⁶⁶⁸ In the *UNE Remand Order*, however, the Commission recognized that a competitive signaling market was emerging. Nevertheless, the Commission determined that these alternative networks could not match the incumbent LECs' signaling systems in terms of quality and ubiquity, and accordingly, ruled that signaling networks must continue to be unbundled.¹⁶⁶⁹

2. Discussion

544. As explained above in our discussion of unbundled switching, in the instances in which incumbent LECs will be required to provide access to switching as a UNE, carriers purchasing the switching UNE must also gain access to incumbent LEC signaling.¹⁶⁷⁰ In all other cases, however, we determine that there are sufficient alternatives in the market available to incumbent LEC signaling networks and competitive LECs are no longer impaired without access to such networks as UNEs for all markets.¹⁶⁷¹

545. We conclude that, in the last several years, the market for signaling networks has matured. The record reflects that multiple alternative providers are available to provide rival signaling services to competitive LECs.¹⁶⁷² Accordingly, we conclude that, as a general matter,

¹⁶⁶⁴ *Local Competition Order*, 11 FCC Rcd at 15723-24, para. 455.

¹⁶⁶⁵ *Id.*

¹⁶⁶⁶ SS7 networks use signaling links to transmit routing messages between switches and call-related databases (such as the Line Information Database, Toll Free Calling Database, and Advanced Intelligent Network Databases). These links enable a switch to send queries via the SS7 network to call-related databases, which return customer information or instructions for call routing to the switch. A typical SS7 network includes a signaling link that transmits signaling information in packets, from a local switch to a STP, which is a high-capacity packet switch. *UNE Remand Order*, 15 FCC Rcd at 3866, para. 380 n.746.

¹⁶⁶⁷ *Local Competition Order*, 11 FCC Rcd at 15740, para. 482.

¹⁶⁶⁸ *Id.*

¹⁶⁶⁹ *UNE Remand Order*, 15 FCC Rcd at 3873, para. 397.

¹⁶⁷⁰ See *supra* Part VI.D.

¹⁶⁷¹ As stated below, this conclusion applies to both the mass market and the enterprise market.

¹⁶⁷² See, e.g., Sprint Comments at 49-50; Illuminet Comments at 3-5; Verizon Comments at 129-32.

competitive LECs are no longer impaired without access to the incumbent LECs' signaling networks as a UNE. In performing our impairment analysis, we consider whether barriers exist for a competitive LEC to serve customers through either deploying its own signaling network or by purchasing signaling from alternative providers to the incumbent LEC. We determine that no such barriers exist. A review of our record reveals that there are numerous competitive suppliers of signaling services, such as Illuminet, TSI, Southern New England Telephone, AT&T, WorldCom and Sprint,¹⁶⁷³ all of which are actively providing signaling services to competitive LECs on a commercial basis. For instance, Illuminet, which owns the largest signaling network in the United States that is unaffiliated with an incumbent LEC, has access to all of the LATAs of the BOCs and major independent LECs, operates 14 STP pairs, and provides signaling to competitive carriers on a national scope.¹⁶⁷⁴ Similarly, TSI provides a nationwide signaling service that offers SS7 access to and from nearly all LATAs within the United States.¹⁶⁷⁵ There are also regional SS7 options for competitive carriers. Sprint, for example, operates a regional SS7 network, which contains ten pairs of regional STPs and one national STP pair that serves Sprint customers in 18 states.¹⁶⁷⁶ ICG also offers a regional SS7 service, which is available from over thirty cities via ICG's regional STP access hub nodes.¹⁶⁷⁷ Indeed, there is evidence in the record that many competitive LECs are using alternative providers for most or all of their signaling needs.¹⁶⁷⁸ There is also evidence of self-deployment of SS7 network capabilities by competitive carriers, such as TimeWarner Telecom and NewSouth.¹⁶⁷⁹ We find, therefore, that for competitive carriers deploying their own switches, there are no barriers to obtaining signaling or self-provisioning signaling capabilities and we do not require incumbent LECs to continue offering access to signaling as a UNE under section 251(c)(3) of the Act.

¹⁶⁷³ See Illuminet Comments at 4 n.3; Verizon Comments at 129-33.

¹⁶⁷⁴ Illuminet Comments at 5.

¹⁶⁷⁵ See SBC Reply at 164; see generally *TSI Connections: Home* (visited Jan. 3, 2003) <<http://www.tsiconnections.com>>.

¹⁶⁷⁶ Sprint Reply, Attach. A, Joint Declaration of John D. Chapman and Jeffrey L. Leister (Sprint Chapman/Leister Reply Decl.) at para. 6.

¹⁶⁷⁷ See Verizon Comments at 131; see generally *Welcome to ICG Communications* (visited Jan. 3, 2003) <<http://www.icgcom.com>>.

¹⁶⁷⁸ For instance Illuminet states that it has more than 900 customers, including incumbent LECs, competitive LECs, interexchange carriers, CMRS providers and Internet service providers that are connected to its network by approximately 2700 access links and 950 signaling points. Illuminet Comments at 5. In addition, Sprint provides evidence that the vast majority of competitive LECs providing service in Sprint's local territories do not purchase UNE signaling from Sprint. Sprint Comments at 50.

¹⁶⁷⁹ Sprint Reply at 40; Verizon Comments at 132 (citing evidence that Time Warner and NewSouth have deployed their own signaling networks); see also *NewSouth Communications Completes SS7 Network Buildout* (Mar. 29, 2001) <www.newsouth.com/news/press_releases/a349.asp>.

546. Consistent with this analysis, we reject the claims of competitive carriers that signaling networks should remain available as UNEs.¹⁶⁸⁰ Even those carriers arguing for the retention of signaling as a UNE recognize that multiple alternative providers exist.¹⁶⁸¹ These carriers argue, however, that because alternative providers utilize fewer STPs,¹⁶⁸² instead of one STP in each LATA, such providers do not offer the same level of ubiquity and thus, are not a genuine substitute to the incumbent LECs' signaling.¹⁶⁸³ We find these arguments unpersuasive. Our impairment analysis does not require exact replication of the incumbent LECs' networks. Rather, when it is evident that there are alternative providers for a particular network element, the Commission must determine whether the alternative product or self-provisioning can be used in an economic manner to enter and stay in the market. This is clearly the case with signaling networks. The record reflects that many competitive LECs use either their own signaling networks or the networks of alternative providers to provide signaling for their customers.¹⁶⁸⁴ Although competitive SS7 providers state that their networks tend to have STPs in various strategically located points, while the BOCs have STPs in every LATA, such providers claim that it is unnecessary to have an STP in every LATA to ensure network redundancy and reliability.¹⁶⁸⁵ Moreover, there is evidence in the record that the incumbent LEC signaling facilities are being modified more closely to resemble the networks of the alternative providers. For instance, BellSouth has reduced the number of STPs it has deployed by 50 percent and no longer has an STP in every LATA.¹⁶⁸⁶

547. We find the appropriate level of granularity for our analysis to be at the national level. Two of the alternative signaling networks discussed above are national networks that competitive LECs can utilize throughout the country. Both the Illuminet and TSI networks are designed with pairs of STPs strategically located throughout the country, in order to offer

¹⁶⁸⁰ See, e.g., Allegiance Comments at 31-37; ALTS *et al.* Comments at 87-89; NuVox Comments at 106-07; see also Letter from Joseph O. Kahl, Director – Regulatory Affairs, RCN Telecom Services, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-338 (filed Jan. 23, 2003) (RCN Jan. 23, 2003 *Ex Parte* Letter).

¹⁶⁸¹ For instance, Allegiance admits that Illuminet, TSI, Southern New England Telephone, AT&T, WorldCom and Sprint all provide signaling services that bear a resemblance to unbundled incumbent LEC SS7. Allegiance Comments at 31.

¹⁶⁸² STPs are packet switches that provide access to the SS7 network and route SS7 messages among service switching points and service control points. These are the traffic controllers of the SS7 network and typically consist of highly reliable computers running special software. Allegiance Comments at 32 n.49. We readopt here the *UNE Remand Order*'s conclusion that when a requesting telecommunications carrier purchases unbundled local circuit switching from an incumbent LEC, the incumbent LEC must allow the competitive LEC to use its service control point element in the same manner, and via the same signaling links, as the incumbent LEC itself. See *UNE Remand Order*, 15 FCC Rcd at 3878, para. 410.

¹⁶⁸³ See, e.g., Allegiance Comments at 32; ALTS *et al.* Comments at 88.

¹⁶⁸⁴ See Illuminet Comments at 5; Verizon Comments at 129-33.

¹⁶⁸⁵ For instance, Sprint operates eleven STPs that serve Sprint's customers in eighteen states. See, e.g., Sprint Reply; see also Sprint Chapman/Leister Reply Decl. at paras. 3, 6-7.

¹⁶⁸⁶ BellSouth Comments at 103.

competitive carriers access to their SS7 networks nationwide.¹⁶⁸⁷ Other SS7 providers, such as ICG and Sprint, have fewer STP pairs and offer a more regional SS7 service—but still a service that spans numerous states and markets.¹⁶⁸⁸ Thus, the availability of alternatives does not vary significantly from region to region. Indeed, the main distinction between signaling offered in different geographic areas is the identity of the incumbent LEC providing signaling, rather than the availability of alternative providers. Moreover, our conclusion applies equally to the mass market and the enterprise market. Signaling networks are multistate in scope and the feasibility of using alternative providers is linked to whether a carrier has deployed its own switches, rather than the types of customers the carrier serves.¹⁶⁸⁹ Accordingly, as we stated above, in the instances that carriers purchase switching as a UNE under the terms established in this Order they will continue to obtain access to the incumbent LECs' signaling networks. For carriers deploying their own switches, the signaling networks are accessed via the switch, therefore, the feasibility of using alternative signaling providers would not be different whether the carrier serves enterprise or mass market customers.

548. Finally, we note that although we are no longer requiring incumbent LECs, pursuant to section 251(c)(3), to provide unbundled access to their signaling networks, there is a clear obligation on the incumbent LECs, pursuant to sections 251(a), 251(c)(2) and our rules implementing these requirements, to provide for interconnection between their signaling networks and the signaling networks of alternative providers.¹⁶⁹⁰ Based on the evidence in the record that third party providers of signaling are currently interconnected with the incumbent LEC signaling networks, we conclude that such interconnection is clearly technically feasible and that nothing in this Order should be interpreted as altering those interconnection obligations.¹⁶⁹¹

H. Call-Related Databases

1. Background

549. Call-related databases are databases that are used in signaling networks for billing and collection or for the transmission, routing or other provision of telecommunications services.¹⁶⁹² We have identified several specific databases as covered by our call-related database

¹⁶⁸⁷ See, e.g., Illuminet Comments at 4; SBC Reply at 164.

¹⁶⁸⁸ See Sprint Reply at 40; SBC Reply at 164.

¹⁶⁸⁹ Switch technology requires each local switch to connect to a single STP. Therefore, a carrier that has deployed its own switch may link its switch to a signaling network of its choosing. See *UNE Remand Order*, 15 FCC Rcd at 3868-69, paras. 367-87.

¹⁶⁹⁰ 47 U.S.C. §§ 251(a), 251(c)(2).

¹⁶⁹¹ For example, Sprint's SS7 network is interconnected with a variety of signaling providers including: AT&T, WorldCom, Transaction Network Services, SNET, Illuminet, Qwest, Bell South, Verizon, SBC, and AT&T Wireless. Sprint Chapman/Leister Reply Decl. at para. 5.

¹⁶⁹² These are not those databases and systems covered by the Commission's operations support systems (OSS) requirements, discussed in Part VI.I. *infra*. See *UNE Remand Order*, 15 FCC Rcd at 3875, para. 403.

requirements: (i) LIDB;¹⁶⁹³ (ii) CNAM;¹⁶⁹⁴ (iii) Toll Free Calling;¹⁶⁹⁵ (iv) LNP;¹⁶⁹⁶ (v) AIN;¹⁶⁹⁷ and (vi) E911.¹⁶⁹⁸ Parties have identified in the record no additional databases covered by the *UNE Remand Order's* definition for call-related databases.

550. In the *UNE Remand Order*, the Commission found that competitors--even those that deployed their own switching equipment--would be impaired without access to the incumbent LECs' call-related databases.¹⁶⁹⁹ Moreover, the Commission noted that its analysis of call-related databases is intertwined with its analysis of signaling, because signaling is necessary to obtain access to certain call-related databases.¹⁷⁰⁰

2. Discussion

551. We find that competitive carriers that deploy their own switches are not impaired in any market without access to incumbent LEC call-related databases, with the exception of the 911 and E911 databases as discussed below.¹⁷⁰¹ For carriers that deploy their own switches, there is evidence in the record that, along with signaling, there are a substantial number of competitive suppliers of call-related databases that competitive LECs can reliably utilize as an alternative to the incumbent LEC's services. Moreover, because competitive carriers access call-related databases through signaling networks, it follows that since we found that competitive carriers

¹⁶⁹³ The Line Information Database or "LIDB" contains all valid telephone numbers and calling card information in a specific region (*i.e.*, incumbent LEC in-region territory). NEWTON'S TELECOM DICTIONARY 429 (18th ed.2002). Access to the LIDB supports carrier provision of such services as Originating Line Number Screening, Calling Card Validation, Billing Number Screening, Calling Card Fraud and Public Telephone Check. These services are provided in conjunction with local exchange, toll and other telecommunications services.

¹⁶⁹⁴ The Caller ID with Name database or "CNAM" allows carriers to provide Caller ID and other CLASS services. See *UNE Remand Order*, 15 FCC Rcd at 3876, para. 406.

¹⁶⁹⁵ Databases at the core of all toll free number services (*i.e.*, 800, 888) are administered by an independent number administrator. See *Toll Free Service Access Codes*, CC Docket No. 95-155, Fifth Report and Order, 15 FCC Rcd 11939, 11948-49, para. 25 (2000) (*Toll Free Order*).

¹⁶⁹⁶ Local Number Portability databases are used to facilitate the porting of numbers between local exchange carriers and are deployed through a system of multiple regional databases. Each regional database is managed by the local number portability administrator (LNPA). See *Telephone Number Portability*, CC Docket No. 95-116, Second Report and Order, 12 FCC Rcd 12281, 12296, para. 21 (1997) (*Number Portability Order*).

¹⁶⁹⁷ The Advanced Intelligent Network (AIN) uses distributed intelligence in centralized databases to control call processing and manage network information, eliminating the need for those functions to be performed at every switch. *UNE Remand Order*, 15 FCC Rcd at 3875, para. 404.

¹⁶⁹⁸ 911 and E911 databases are used to support the provision of emergency 911 services. *UNE Remand Order*, 15 FCC Rcd at 3876, para. 406.

¹⁶⁹⁹ *Id.* at 3879, para. 411.

¹⁷⁰⁰ *Id.*

¹⁷⁰¹ As stated below, this conclusion applies to both the mass market and the enterprise market.

have alternative providers available and are not impaired without access to unbundled signaling, competitive carriers are also not impaired without access to call-related databases. In such instances where switching remains a UNE, however, competitive carriers purchasing the switching UNE will have access to signaling and the call-related databases that the signaling networks permit carriers to access.¹⁷⁰²

552. As with signaling, we find the appropriate level of granularity for our analysis to be at the national level. The alternative call-related database networks discussed below are national and regional networks that competitive LECs would be able to use throughout the country.¹⁷⁰³ Because these networks are multistate in scope the availability of alternatives does not vary significantly from market to market. Indeed, the main distinction between call-related databases offered in different geographic areas is the identity of the incumbent LEC providing access to the databases, rather than the availability of alternative providers. In addition, our conclusion applies equally to the mass market and the enterprise market. Call-related databases are accessed through signaling networks, which are national in scope and the feasibility of using alternative providers is linked to whether a carrier has deployed its own switches, rather than the types of customers the carrier serves.¹⁷⁰⁴ Accordingly, as we stated above, carriers that purchase switching as a UNE will also obtain unbundled access to the incumbent LEC's call-related databases. For carriers deploying their own switches, the call-related databases are accessed through signaling networks, which are accessed via the switch, therefore, the feasibility of using alternative providers would not be different whether the carrier serves mass market or enterprise customers.

553. In performing our impairment analysis, we consider whether competitive LECs can serve customers through either deploying their own call-related databases or by purchasing call-related databases from providers other than the incumbent LEC. The record in this proceeding reveals that there are a number of competitive suppliers providing call-related database services that are comparable to the functionality of unbundled access, and these suppliers are actively providing such services to competitive LECs on a commercial basis.¹⁷⁰⁵ For example, Sprint maintains national database platforms, including Toll Free Calling, CNAM, LIDB and LNP.¹⁷⁰⁶ Illuminet provides its signaling customers with access to call-related databases, including Toll Free Calling, LNP, CNAM, and LIDB.¹⁷⁰⁷ Alternative providers such as Tekelec also provide access to AIN databases that competitive LECs can utilize to control call

¹⁷⁰² See *supra* Part V.D.

¹⁷⁰³ With regard to the 911 and E911 databases, there is no evidence of alternative providers in any part of the country. Accordingly, the granularity of our impairment analysis is at the national level as well.

¹⁷⁰⁴ *UNE Remand Order*, 15 FCC Rcd at 3878, para. 410.

¹⁷⁰⁵ See Sprint Comments at 50-51; Verizon Comments at 133-36.

¹⁷⁰⁶ Sprint Chapman/Leister Reply Decl. at para. 9.

¹⁷⁰⁷ Illuminet Comments at 5-7.

processing and manage network information.¹⁷⁰⁸ All of these providers offer competitive LECs call-related database products as an alternative to the incumbent LECs' services.¹⁷⁰⁹ Moreover, certain competitive LECs have self-deployed their own call-related databases.¹⁷¹⁰

554. We therefore reject the general claims of commenters that they are impaired without access to the incumbent LECs' call-related databases.¹⁷¹¹ Specifically, a number of carriers argue that they are impaired without access to the incumbent LECs' CNAM and LIDB databases. Although such carriers recognize that alternative providers are available for these databases, they contend that third-party CNAM and LIDB databases are inferior to those of the incumbent LECs.¹⁷¹² We find these arguments for impairment to be unpersuasive. When it is evident that there are alternative providers for a particular network element, the question is not whether the alternatives are an exact replica of the element offered by the incumbent LEC, but whether the alternative products or self-provisioning are reliable products that can be used in an economically sound manner to enter and stay in the market. In this instance, it is clear that carriers can either self-provision or use alternative providers to obtain CNAM and LIDB database services. Indeed, WorldCom has constructed its own CNAM database that it accesses using its own signaling network.¹⁷¹³ Furthermore, there is evidence in the record that many competitive carriers are using alternative providers to obtain CNAM and LIDB database services, and commenters provide no persuasive evidence as to why CNAM and LIDB databases offered by such vendors are insufficient alternatives to the incumbent LEC.¹⁷¹⁴ For instance, Illuminet claims that it offers access, through its SS7 network, to all of the LIDB databases in the United States for various purposes, and also manages and operates its own LIDB database.¹⁷¹⁵ Illuminet also offers a CNAM database and a CNAM delivery access and transport service that provides SS7 connectivity to all available CNAM databases for nationwide name delivery for wireline and wireless carriers.¹⁷¹⁶ In addition, Targus Information Services offers a Caller Name Express services that provides nationwide calling name delivery with over 140 million names, from a

¹⁷⁰⁸ Verizon Comments at 134-35.

¹⁷⁰⁹ See, e.g., Illuminet Comments at 5-7; Sprint Comments at 39-40.

¹⁷¹⁰ For instance, WorldCom has constructed its own CNAM database. WorldCom Reply at 164. In addition, according to Verizon, Time Warner Telecom has, or is in the process of constructing, a LNP database in addition to its own SS7 network. Verizon Comments at 132 n.475.

¹⁷¹¹ See, e.g., AT&T Comments at 239-40; CompTel Comments at 86; ALTS *et al.* Comments at 90; WorldCom Comments at 122-27; see also AT&T Jan. 10, 2003 *Ex Parte* Letter.

¹⁷¹² See, e.g., ALTS *et al.* Comments at 90.

¹⁷¹³ WorldCom Reply at 165.

¹⁷¹⁴ For instance, WorldCom claims that it would be unable to duplicate the LIDB database, however, it fails to address the alternative providers of LIDB that are available. WorldCom Reply at 165.

¹⁷¹⁵ Illuminet Comments at 6-7.

¹⁷¹⁶ *Id.*, App. B at 2.

database accessible through SS7.¹⁷¹⁷ We find, therefore, that competing carriers are not impaired without access to incumbent LEC CNAM and LIDB databases.

555. We similarly find that carriers are not impaired without access to the Toll Free Calling and LNP databases. Like CNAM and LIDB databases, there are third-party vendors available to provide competitive carriers access to Toll Free Calling and LNP databases. For instance, Illuminet's SS7 network provides access to all toll free numbers in the country for call-routing.¹⁷¹⁸ Illuminet also provides competitive carriers extensive local number portability services, including service order administration and network transport routing of all queries to nationwide LNP databases.¹⁷¹⁹ Sprint also provides access to Toll Free Calling and LNP databases to customers of its SS7 services.¹⁷²⁰ Moreover, we note that competitive carriers have not claimed that these third-party alternatives to the incumbent LEC's Toll Free Calling and LNP databases are inferior to those offered by the incumbent LECs.

556. With regard to AIN databases, in the *UNE Remand Order*, the Commission determined that incumbent LECs were required to provide unbundled access to AIN platform and architecture, but concluded that the AIN service software was proprietary and not "necessary" for competitive LECs to gain unbundled access under section 251(d)(2)(A).¹⁷²¹ Like the call-related databases discussed above, we conclude that the market for AIN platform and architecture has matured since the Commission adopted the *UNE Remand Order* and we no longer find that competitive LECs are impaired without unbundled access to those databases. For instance, Illuminet provides carriers access to AIN services that permit subscribers to manage incoming and outgoing calls through a web interface.¹⁷²² In addition, the record indicates that Tekelec provides an AIN service center, which includes a service creation environment that "provides complete local visibility and control over network services, allowing telecommunications providers to rapidly bring new services to market."¹⁷²³ We also note that parties that supported unbundling did not provide specific information rebutting the evidence that these alternative offerings can be used by carriers in an economically sound manner to enter and stay in the market.¹⁷²⁴

¹⁷¹⁷ Sprint Comments at 51.

¹⁷¹⁸ Illuminet Comments at 7.

¹⁷¹⁹ *Id.* at 6.

¹⁷²⁰ Sprint Chapman/Leister Reply Decl. at para. 8.

¹⁷²¹ *UNE Remand Order*, 15 FCC Rcd at 3875, 3882, paras. 402, 419.

¹⁷²² Illuminet Comments, App. B at 2.

¹⁷²³ See Verizon Comments at 134-35 n.490.

¹⁷²⁴ Consistent with our findings regarding the AIN databases, we dismiss as moot Low Tech Designs' Petition for Reconsideration of several aspects of the *UNE Remand Order*. Because we no longer require incumbent LECs to unbundle access to the AIN databases for carriers not using the incumbent LEC's switching capabilities, it is unnecessary to consider modifying the definition or the manner in which those carriers would be able to obtain (continued....)

557. We conclude that competitive carriers continue to be impaired on a national basis without access to the 911 and E911 databases. Therefore, access to such databases must continue to be unbundled. Significantly, we note that no commenter has argued otherwise. Contrary to the call-related databases discussed above, no commenter in this proceeding has provided evidence of alternative providers of 911 or E911 databases that competitive carriers could utilize or of carriers self-provisioning their own services. Moreover, because of the unique nature of 911 and E911 services and the public safety issues inherent in ensuring nondiscriminatory access to such databases, we conclude that without evidence of alternative providers or the ability to self-deploy, competitive carriers must continue to obtain unbundled access to those databases to ensure that their customers have access to emergency services.

558. We reject competitive LECs' assertions that, we should require in this proceeding unbundled access to the incumbent LEC databases for bulk transfer of information for competitive carriers to maintain their own call-related databases.¹⁷²⁵ Specifically, competitive LECs claim that they should be able to access the CNAM database via batch download, which would allow them to obtain a copy and thus, maintain their own CNAM databases.¹⁷²⁶ We conclude that this issue is more properly addressed pursuant to the dialing parity requirements under section 251(b)(3),¹⁷²⁷ rather than our impairment analysis under section 251(d)(2). Our impairment analysis is necessarily focused on the appropriate access to incumbent LEC facilities that competitive LECs are unable to self-provide or obtain from other sources, and as explained above, there is persuasive evidence that competitive LECs have alternative sources available to obtain access to call-related databases generally, and the CNAM database specifically. To the extent that competition may lead to inability to obtain complete CNAM databases that could impede the continued availability of nondiscriminatory dialing parity for all providers of local exchange services, that is an issue that ultimately will impact incumbent LECs as significantly as competitive LECs and therefore is more appropriate for treatment under the requirements of section 251(b)(3) than in this docket.¹⁷²⁸

559. We also dismiss as moot WorldCom's Petition for Declaratory Ruling requesting Commission confirmation that requesting carriers are entitled to access LIDB data at cost-based

(Continued from previous page) —————

access to those databases. See Low Tech Designs Petition for Reconsideration, CC Docket No. 96-98 (filed Feb. 15, 2000).

¹⁷²⁵ See, e.g., WorldCom Comments at 122-27.

¹⁷²⁶ WorldCom Comments at 125.

¹⁷²⁷ 47 U.S.C. § 251(b)(3). All local exchange carriers have the duty to provide nondiscriminatory access to telephone numbers, operator services, directory assistance, and directory listing, with no unreasonable dialing delays.

¹⁷²⁸ See *In the Matters of Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, Interconnection Between Local Exchange Carriers and Commercial Mobile Radio Service Providers, Area Code Relief Plan For Dallas And Houston, Ordered By The Public Utility Commission Of Texas, Administration of the North American Numbering Plan*, CC Docket Nos. 96-98, 95-185, 92-237, NSD File No. 96-8, Second Report and Order and Memorandum Opinion and Order, 11 FCC Rcd 19392, 19446, para. 106 (1996) (*Local Competition Second Report and Order*).

rates when they use such data to provide interexchange and exchange access service.¹⁷²⁹ Because, as explained above, we conclude that competitive carriers are not impaired without access to the LIDB database as a UNE, it is unnecessary for us to determine whether use restrictions should be applied.¹⁷³⁰

560. We also reject the arguments of some parties that we should require incumbent LECs to provide unbundled access to Operator Services and Directory Assistance (OS/DA), contrary to the Commission's finding that there was no impairment in the *UNE Remand Order*.¹⁷³¹ Moreover, we deny the Petition for Reconsideration of RCN Telecom Services arguing that the Commission should reconsider its prior decision to remove OS/DA from the UNE list.¹⁷³² As the Commission concluded in the *UNE Remand Order*, there are multiple alternative providers of OS/DA that are available to competitive carriers and offer a level of quality similar to that of the incumbent LECs' services.¹⁷³³ The parties requesting the Commission to unbundle the databases underlying these services fail to provide evidence that the alternative providers cited in the *UNE Remand Order* no longer make these elements available. Instead, these parties claim that the alternative sources of OS/DA fail to provide the same level of quality as the incumbent LEC services.¹⁷³⁴ As we stated above in the signaling section, the Commission need not conclude that alternative providers are an exact substitute for the incumbent LEC in order to find no impairment. We have no evidence to suggest that anything has changed since the Commission's findings in the *UNE Remand Order* that would impair the ability of competitive LECs to obtain alternative sources for OS/DA. Furthermore, for the same reasons in the *UNE Remand Order*, we find that in order to ensure that competitive carriers have access to OS/DA, in those circumstances where switching is unbundled, we require incumbent LECs to provide unbundled access to competitive carriers purchasing the switching UNE, if the

¹⁷²⁹ Petition of WorldCom for a Declaratory Ruling that ILECs are Prohibited from Imposing Use Restrictions on UNEs such as LIDB, CC Docket No. 01-338 (filed Aug. 8, 2002).

¹⁷³⁰ However, for general discussion of the types of services competitive carriers may use UNEs to provide see *supra* Part V.B.2.c.

¹⁷³¹ See, e.g., ALTS *et al.* Comments at 90-95; WorldCom Comments at 127-29.

¹⁷³² See RCN Telecom Services Petition for Reconsideration, CC Docket No. 96-98 (filed Feb. 17, 2000) (RCN Feb. 17, 2000 Petition for Reconsideration). We also deny MCI WorldCom's Petition for Reconsideration to the extent the Petition requests that OS/DA continue to be available as a UNE. See MCI WorldCom Feb. 17, 2000 Petition for Reconsideration at 18-19.

¹⁷³³ *UNE Remand Order*, 15 FCC Rcd at 3894, paras. 447-48.

¹⁷³⁴ See ALTS *et al.* Comments at 92. Moreover, RCN argues that operator services should remain a UNE because consumers sometimes rely on operators to route calls to PSAPs in emergency situations. RCN Petition for Reconsideration at 3. As we concluded in the *UNE Remand Order*, there are only limited instances where an operator would connect a consumer with a PSAP and there is no persuasive evidence that incumbent LEC call centers would be better able to determine the correct PSAP than alternative providers, especially if the incumbent LEC utilizes remote call centers. *UNE Remand Order*, 15 FCC Rcd at 3901, para. 460.

incumbent LEC does not provide customized routing necessary to use alternative providers.¹⁷³⁵ Lastly, we note, as the Commission did in the *UNE Remand Order*, that incumbent LECs continue to remain obligated pursuant to section 251(b)(3) to provide nondiscriminatory access to OS/DA.¹⁷³⁶

I. OSS Functions

1. Background

561. In our previous orders, we defined OSS as consisting of five functions: pre-ordering, ordering, provisioning, maintenance and repair, and billing functions supported by an incumbent LEC's databases and information.¹⁷³⁷ These functions are essential for carriers to serve mass market and enterprise customers. OSS includes manual, computerized, and automated systems, together with associated business processes and the data maintained and kept current in those systems.¹⁷³⁸ In the *UNE Remand Order*, we clarified that the pre-ordering OSS functions include access to loop qualification information.¹⁷³⁹ Based on this definition, in both the *Local Competition Order* and the *UNE Remand Order*, the Commission concluded that requesting carriers are impaired without access to the incumbent LEC's OSS as a UNE, and required incumbent LECs to provide nondiscriminatory access to all OSS functions.¹⁷⁴⁰ The Commission noted that the incumbent LECs' OSS provides access to vital information that is not available from third parties and is critical to the ability of competitive LECs to offer local exchange and exchange access service.¹⁷⁴¹ In the *Triennial Review NPRM*, the Commission sought comment on whether we should retain these unbundling requirements in light of any changed circumstances that exist in the market.¹⁷⁴²

¹⁷³⁵ Moreover, we grant in part the Petitions for Clarification of MCI WorldCom and AT&T to the extent they request the Commission to clarify that such customized routing must be provided in a manner that allows competitive LECs to efficiently access either a third party's OS/DA platform or their own OS/DA Platform. See AT&T Feb. 17, 2000 Petition for Reconsideration at 20-24; MCI WorldCom Feb. 17, 2000 Petition for Clarification at 16-20; see also LSSI Reply at 5 (arguing that incumbent LECs have not yet made sufficient customized routing available).

¹⁷³⁶ See *UNE Remand Order*, 15 FCC Rcd at 3903, para. 464.

¹⁷³⁷ See *Local Competition Order*, 11 FCC Rcd at 15764, para. 518; *UNE Remand Order*, 15 FCC Rcd at 3884, para. 425. The Commission determined that incumbent LECs must make these five functions of OSS available to competitors on an unbundled basis.

¹⁷³⁸ *UNE Remand Order*, 15 FCC Rcd at 3884, para. 425.

¹⁷³⁹ Loop qualification information identifies the physical attributes of the loop plant (such as loop length, the presence of load coils and bridge taps, and the presence and type of Digital Loop Carrier) that enable carriers to determine whether the loop is capable of supporting xDSL and other advanced technologies. *Id.* at 3885, para. 426.

¹⁷⁴⁰ *Local Competition Order*, 11 FCC Rcd at 15763, para. 516; *UNE Remand Order*, 15 FCC Rcd at 3887, para. 433.

¹⁷⁴¹ See *UNE Remand Order*, 15 FCC Rcd at 3887, para. 433.

¹⁷⁴² *Triennial Review NPRM*, 16 FCC Rcd at 22811, para. 64.

2. Discussion

562. We adopt again the same definition of OSS as in our prior orders, including statements about loop qualification.¹⁷⁴³ No commenters have put forth alternative definitions or modifications to our existing definition. We further find that competitive LECs providing qualifying services continue to be impaired on a national basis without access to OSS. Accordingly, we require incumbent LECs to continue to provide unbundled access to OSS. This requirement includes an ongoing obligation on the incumbent LECs to make modifications to existing OSS as necessary to offer competitive carriers nondiscriminatory access and to ensure that the incumbent LEC complies with all of its network element, resale and interconnection obligations in a nondiscriminatory manner—including any new obligations established in this Order.¹⁷⁴⁴ We note that even the incumbent LECs have not argued against OSS continuing to be available as a UNE.¹⁷⁴⁵

563. Commenters in this proceeding generally agree that OSS functions must remain available to competitive carriers as UNEs.¹⁷⁴⁶ Competitive LECs contend that no substitutable alternative market for OSS has developed because the incumbent LECs retain access to exclusive information and functionalities required to provide OSS services.¹⁷⁴⁷ Indeed, competitive LECs assert that access to all five OSS functions the Commission has identified in addition to the business processes associated with the change management procedures are essential to ensure that competitive LECs are not impaired without access to these functions.¹⁷⁴⁸ We agree with these commenters and conclude that, to the extent a competitive LEC is providing a qualifying service it is entitled to access the incumbent LEC's OSS to offer that service.

564. In reaching this conclusion, we find that the systems, databases, and personnel that the incumbent LEC uses to provide OSS functions represent an extensive infrastructure that would be difficult, if not impossible, for competitors to duplicate. Indeed, there is no evidence in the record that any competitive LEC has been able to successfully self-provision OSS functions, and there is no evidence of any alternative providers available. Accordingly, because these systems, databases and personnel are under the exclusive control of the incumbent LEC and are necessary for competitors effectively to access network elements, resell incumbent LEC services and interconnect with the incumbent LEC, we find that competitive LECs are impaired without access to incumbent LECs' OSS.

¹⁷⁴³ See *UNE Remand Order*, 15 FCC Rcd at 3884-87, paras 425-31.

¹⁷⁴⁴ See *infra* Parts VI.B.1.d.(i) and VI.B.5. In these sections, we note modifications that incumbent LECs must make to their OSS in order to comply with unbundling obligations specified in this Order.

¹⁷⁴⁵ See, e.g., SBC Reply at 167.

¹⁷⁴⁶ See, e.g., ALTS *et al.* Comments at 77-80; Sprint Comments at 51-52; WorldCom Comments at 129-33; AT&T Comments at 240-41; Allegiance Comments at 37-38; Covad Comments at 74-77.

¹⁷⁴⁷ See Allegiance Comments at 37-38; Covad Comment at 75; ALTS *et al.* Comments at 78-79.

¹⁷⁴⁸ WorldCom Comments at 131.

565. Although the specific systems, databases and personnel used to provide OSS functions may vary by incumbent LEC and by state, the OSS functions as defined apply universally for all incumbent LECs and there is no evidence in the record that would suggest a more geographically disaggregated approach to our OSS unbundling requirement. We therefore adopt an unbundling requirement for OSS functions on a national basis.

566. However, we recognize the wide variety of systems and databases that comprise the OSS of incumbent LECs, and the important role that state commissions have played in facilitating access to incumbent LEC OSS through the section 271 process and other state proceedings. Although our determination that OSS for qualifying services must continue to be unbundled is a national rule, we expect that states will continue their important role in working with the incumbent LECs and competitive LECs to ensure that competitors obtain necessary access to the particular incumbent LEC OSS systems in each state for the qualifying services.¹⁷⁴⁹ In addition, our conclusions apply equally to the mass market and the enterprise market. Because there are no alternative OSS providers and competitive LECs are impaired without access to OSS, whether the customers are mass market or enterprise, we find that there is no reason to distinguish between such markets in establishing the availability of OSS as a UNE.

567. SBC, however, urges the Commission to clarify that incumbent LECs do not need to provide direct access to back office systems.¹⁷⁵⁰ SBC suggests that, under the approach taken in the *UNE Remand Order*, an incumbent LEC may satisfy its obligations with respect to loop qualification information by providing carriers with the same underlying information that it has in any of its own databases or internal records without offering direct access to those records.¹⁷⁵¹ We agree, and note that this conclusion was recently reflected in our *Qwest 9-State Order*, in which we held that Qwest was not required to permit competitive LECs direct access to its back office loop qualification database.¹⁷⁵²

568. Covad also argues that incumbent LECs should modify their OSS to provide certain additional information related to certain facilities and network elements, consistent with

¹⁷⁴⁹ Along those lines, we reject Illuminet's request that we require all incumbent LECs to standardize their OSS functionalities and specifically their pre-ordering processes. Illuminet Comments at 9. The Act does not require nationwide uniformity among all incumbent LECs. We also note that in most states, BOCs' OSS processes have already been subject to third-party testing and state commission review, and we decline to require the substantial modifications to such systems necessary to achieve uniformity.

¹⁷⁵⁰ SBC claims that back office systems may contain proprietary information about other competitive LEC facilities, and other highly sensitive information. SBC suggests that such information is not "necessary" for competitive carriers to compete, and thus suggests that competitive LECs should not be allowed direct access to systems and databases containing such information. See SBC Reply at 168.

¹⁷⁵¹ *Id.* at 168-69.

¹⁷⁵² *Qwest 9-State 271 Order*, 17 FCC Rcd at 26317, para. 29. In addition, to the extent that Bell Atlantic requested the same clarification, we grant their request. See Verizon Feb. 17, 2000 Petition for Reconsideration at 15-17.

its view of the facilities and network elements it is entitled to access under section 251.¹⁷⁵³ For example, Covad asks that we expressly mandate access to a wide range of information related to remote terminal feature availability.¹⁷⁵⁴ Because we do not adopt Covad's approach to unbundling, we recognize that Covad may not require all of the information it describes in its Comments. We thus decline to reach the level of detail requested by Covad or change our approach to OSS and loop qualification information, but note that Covad remains entitled on a going-forward basis to nondiscriminatory access to OSS as defined herein.

VII. SCOPE OF UNBUNDLING OBLIGATIONS

A. Combinations of Network Elements

1. Background

569. In the *Local Competition Order*, the Commission adopted rules that prohibited incumbent LECs from separating network elements that ordinarily are combined.¹⁷⁵⁵ In addition, the Commission adopted rules requiring incumbent LECs to provide combinations of UNEs when requested by competitive LECs and to perform the necessary functions to make such combinations available.¹⁷⁵⁶ After various appeals before the Eighth Circuit, the Supreme Court addressed both requirements. First, in *Iowa Utilities Board*, the Court reinstated the Commission's rules prohibiting incumbent LECs from separating network elements ordinarily combined.¹⁷⁵⁷ Second, in *Verizon*, the Court reversed the vacatur of sections 51.315(c) through 51.315(f), which required incumbent LECs to provide UNE combinations and perform the necessary functions involved with that process.¹⁷⁵⁸ Specifically, *Verizon* concluded that the Commission's rules reflected a reasonable reading of section 251(c)(3) intended to remove practical barriers to competitive entry into the local exchange market.¹⁷⁵⁹

570. In the *UNE Remand Order*, the Commission required incumbent LECs to provide EELs (*i.e.*, a particular combination of network elements) pursuant to section 51.315(b) of the Commission's rules, which prohibits incumbent LECs from separating currently combined

¹⁷⁵³ Covad Comments at 76-77. We therefore deny WorldCom's request to adopt additional rules stating specific characteristics of the local loop plant that incumbent LECs must disclose to requesting carriers. MCI WorldCom Feb. 17, 2000 Petition for Reconsideration at 23-24.

¹⁷⁵⁴ Covad Comments at 76-77. (arguing that it is entitled to information about the software versions and channel units used in each remote terminal).

¹⁷⁵⁵ *Local Competition Order*, 11 FCC Rcd at 15646-47, paras. 292-93; 47 C.F.R. § 51.315(b).

¹⁷⁵⁶ *Local Competition Order*, 11 FCC Rcd at 15647-48, paras. 294-97.

¹⁷⁵⁷ *Iowa Utils. Bd.*, 525 U.S. at 391-96.

¹⁷⁵⁸ The Eighth Circuit subsequently reinstated the rules. *Iowa Utils. Bd. v. FCC*, 301 F.3d 957.

¹⁷⁵⁹ *Verizon*, 535 U.S. at 531-38.